AN

ACCOUNT

OF THE EFFICACY OF THE

AQUA MEPHITICA ALKALINA;

OR,

SOLUTION OF FIXED ALKALINE SALT, SATURATED WITH FIXIBLE AIR,

IN

CALCULOUS DISORDERS,

AND OTHER

COMPLAINTS OF THE URINARY PASSAGES,

BY

WILLIAM FALCONER, M.D. F.R.S.

AND

PHYSICIAN TO THE GENERAL HOSPITAL AT BATH.

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M DCC LXXXIX.

BRITISH MUSEUM

TO

BENJAMIN COLBORNE, Esq.

OF THE

CITY OF BATH.

DEAR SIR,

ALLOW me to expreſs in this place my unfeigned ſenſe of your Humanity and Benevolence, not only in communicating to the World a moſt valuable diſcovery in Medicine, but alſo in your unwearied attention to procure every information concerning it, in order to render it as uſeful as poſſible.

I eſteem myſelf particularly happy in being permitted to ſhare, in however ſmall a degree, in ſo good a

Work. May its nature and advantages become more publickly known and attended to, and may you yourſelf meet with, what to you will be the beſt and indeed only recompenſe, the ſatisfaction of ſeeing the remedy, to which, under Providence, your preſent happy ſtate of health is owing, extended to the relief of numerous objects labouring under the ſame painful malady, under which you ſuffered ſo greatly. That you may long enjoy every happineſs of Life is the hearty wiſh of,

Dear Sir,

Your much obliged,

And ſincere Friend,

And Humble Servant,

Bath, Jan. 1, 1789.

W. FALCONER.

On the Uſe of the Aqua Mephitica Alkalina, *or Solution of* Fixed Alkaline Salt, *ſaturated with* Fixible Air *in Calculous Complaints.*

THE merit of the original diſcovery that alkaline ſalts were capable of being completely neutralized by Fixible Air, is, I apprehend, due to Mr. BEWLY, of Great Maſſingham, in Norfolk; who in ſome experiments, related in the Appendix to Dr. Prieſtley's ſecond volume of Experiments and Obſervations on different Kinds of Air, has fully proved this point. That gentleman has recommended a trial of water thus impregnated in putrid caſes, and in others wherein the introduction of Fixible Air in large quantities might be adviſable, but does not appear to have had any medical experience of its efficacy. Since that time it has been frequently uſed by practitioners in place of the common

ſaline draught, and I believe with little difference in effect.

The honour, however, of the diſcovery, of what I apprehend to be its moſt important quality hitherto known, that of relieving calculous complaints, is due to a gentleman of this city, Benjamin Colborne, Eſq. who had formerly been of the medical profeſſion, which he practiſed many years with great reputation to himſelf and ſervice to mankind.

Having been a ſevere ſufferer from calculous complaints, he was induced to make trial of ſeveral of the moſt celebrated remedies, but was, after long and ſad experience, convinced but too well of the inefficacy or danger of moſt, if not all of the ſo boaſted lithontriptics. He was then led, fortunately for himſelf, to make trial of the remedy now under conſideration, and the event anſwered much beyond his hopes, and has added greatly to his happineſs; not only by the relief he has himſelf experienced from it, but alſo by the opportunities it has afforded him of indulging,

dulging, in the moſt diſintereſted manner, his benevolent diſpoſition, by recommending its uſe to ſeveral of his friends who laboured under the ſame malady.

Mr. Colborne was led to this diſcovery, partly from obſerving the diſſolvent powers of alkaline ſalts upon the urinary calculus out of the body, and ſtill more by remarking the changes produced by their internal uſe on the urine of thoſe afflicted with theſe diſorders, rendering that clear and of a natural colour, which was before turbid and diſpoſed to precipitation. The diſagreeable taſte, however, of the uncombined alkali, which is moreover ſo nauſeating to the ſtomach, together with its cauſtic, ſeptic, and irritating effects on the animal ſyſtem, the urinary paſſages particularly, were great diſcouragements to its uſe. Could theſe be obviated by any combination that would ſtill leave the alkaline ſalt at liberty to unite with the acid that is ſuppoſed to contribute to the formation of theſe calculi, the purpoſe of preventing their being generated, or poſſibly of diſſolv-

ing them when formed, would probably be in a good meaſure anſwered.

Fixible Air ſeemed to him adapted to this purpoſe in every reſpect, as it forms with the alkali a neutral ſalt, perfectly mild in its nature, agreeable to the taſte and ſtomach, and powerfully antiſeptic. At the ſame time their combination is ſo looſe, that the alkali is eaſily ſeparated from the air by any other acid it may meet with.

He moreover found by experience, that this combination poſſeſſed no inconſiderable diſſolvent powers upon the human calculus out of the body. Hence he was induced to make trial of it himſelf, and to recommend it to others. The accounts of its ſucceſs here ſubjoined will, I truſt, prove that his expectations were not ill founded.

The moſt convenient method of preparing the alkaline ſolution is as follows. Put two ounces and a half troy weight, or if troy weights are not at hand, two ounces

and three quarters *avoirdupois, of dry ſalt of tartar into an open earthen veſſel, and pour thereon five full quarts, wine meaſure, of the ſofteſt water, that is clean and limpid, that can be procured, and ſtir them well together with a clean piece of wood. After ſtanding 24 hours, carefully decant, from any indiſſoluble reſiduum that may remain, as much as will fill the middle part of one of the glaſs machines for impregnating water with Fixible Air. † The alkaline liquor is then to be expoſed to a ſtream of Air according to the directions commonly given for impregnating water § with that fluid. When the alkaline ſolution has remained in this ſituation till the Fixible

* Two ounces and a half troy weight contain 1200 grains; two ounces and three quarters avoirdupois contain 1201 grains and a quarter of a grain.

† If the ſalt of tartar be good, and perfectly ſoluble in the water, every ounce meaſure of the alkaline ſolution ſhould contain ſeven grains and a half of alkaline ſalt.

§ The directions given with the machines ſold by Mr. Parker in Fleet-ſtreet, or by Meſſrs Neale and Bailey, No. 8, St. Paul's Church-Yard, will be ſufficient for thoſe who chuſe to prepare this remedy themſelves.

Fixible Air ceaſes to riſe, a freſh quantity of the fermenting materials ſhould be put into the lower part of the machine, and the ſolution expoſed to a ſecond ſtream of Air, and this proceſs repeated four times. When the alkaline liquor ſhall have continued about 48 hours in this ſituation, it will be fit for uſe, and ſhould then be carefully drawn off into perfectly clean bottles (pints are I think preferable) and cloſely corked up. The bottles ſhould then be placed with their bottoms upwards* in a cool place, and with theſe precautions it will keep ſeveral weeks, and perhaps much longer, very good. The quantity of alkaline ſolution above directed to be mixed at the beginning of the foregoing directions, is judged to be ſufficient to fill the glaſs machines of the common ſize twice over, without pouring off the liquor ſo deep as to hazard making the ſolution turbid, by ſtirring up the indiſſoluble reſiduum which is precipitated at the bottom

* A ſhelf with holes in it to put the necks of the bottles into, ſuch as are commonly uſed for wine decanters, is convenient for this purpoſe.

tom * of the veſſel. The water in which the alkali is diſſolved, ſhould be as free of foreign impregnations as poſſible, as the alkali, by decompoſing them, will not only cloud the water, but form other combinations inconſiſtent, perhaps, with the effects to be wiſhed for from the remedy. The intention therefore of mixing the ſalt of tartar with the water the day before, and of the caution recommended in pouring it off, is to allow time for any precipitation occaſioned by the mixture to ſettle, as well as to ſeparate the indiſſoluble parts of the ſalt of tartar itſelf. Nor is leſs attention neceſſary in procuring the ſalt of tartar pure and in perfection; and on that account it ſhould be got from ſuch places only as can be depended upon. When properly prepared, the alkaline mephitic water ſhould be perfectly clear and rather ſparkling, of an acidulous taſte, and totally free of that diſagreeable impreſſion which alkaline ſalts make on the tongue and throat. †

About

* If the alkaline ſolution as above directed ſhould be found too irritating, it may be made with a ſmaller proportion of the ſalt. See Mr. Melmoth's Caſe.

† Thoſe who do not chuſe, or to whom it is inconvenient

About eight ounces by meaſure appear, from ſome of the caſes, to have been taken thrice in 24 hours for a conſiderable time together, and to have agreed well with the ſtomach, appetite and general health; but I apprehend moſt people will think this too large a quantity, and I believe that for moſt caſes, two thirds, or a pint of the alkaline liquor in 24 hours may ſuffice; ſhould the bulk of the ſeparate doſes* be thought too large, the alkaline ſolution may be made of double the ſtrength, in which caſe, half the quantity will be enough. The times of taking three doſes in the day have been, I believe, pretty early in the morning, about noon, and about ſix in the evening. If twice a day, about noon and in the evening; and if once, which in many caſes ſeems ſufficient for a preventative, about an hour and a half before dinner,

venient to prepare this remedy themſelves, may have it, made according to the above directions, of John Killick, No. 11, Water-ſtreet, adjoining William-ſtreet, near Blackfriars-Bridge. For the conveniency of carriage, as well as the better preſervation of the virtues of the preparation, it is put into ſmall bottles, each of which contains one moderate doſe.

* See Dr. Cooper's Caſe.

dinner. Common prudence dictates that ſuch a remedy ſhould be taken at ſuch times as the ſtomach is leaſt likely to be loaded with victuals.

I do not find, from obſervation or inquiry, that a rigid adherence to any particular regimen of diet is neceſſary, farther than the uſual prudential cautions of moderation and temperance.

The Reverend Dr. Cooper has made uſe of fruit, wine, and other things ſubject to aceſcency, during the time of his taking the ſolution; yet no perſon, as will appear by his very judicious account, has received greater benefit. I, however, think it would be adviſable to abſtain from acids, and from ſuch things as are ſubject to become aceſcent, for ſome time before, and alſo after the time of taking the doſes of the alkaline ſolution. I do not find either from my own obſervation, or from the accounts of others, that any very perceivable effects, ſave that moſt to be wiſhed, the abatement of the troubleſome ſymptoms, followed the taking this remedy. I have inquired of a very

a very ſenſible perſon of this city, who has taken the ſolution in the largeſt quantity of any that I have known; and he aſſures me, that he found no effect from it ſave that of gently opening the body.

Mr. Bewly ſpeaks of a doſe of it that he took affecting the head (with vertigo I ſuppoſe) and proving a pretty ſtrong diuretic. But no ſuch conſequences have been generally obſerved by thoſe perſons of whom I have had an opportunity of inquiring. The perſon before referred to, informed me, that though it kept the body gently open, it had no effect in increaſing the quantity of urine. Mr. Bewly's doſe was indeed large, he having taken at one doſe, ſuch a quantity of the alkaline ſolution as contained 24 ounces by meaſure of Fixible Air, whereas the quantity of air taken at a time in a doſe of the ſolution above directed, is not calculated to exceed 15 ounces; but this was repeated three times a day, and no ſuch effect obſerved. With reſpect to the diuretic quality, it is well known that the expectation of ſuch an effect from any thing we take, will often prove a very powerful means of producing it.

Should it prove cold or flatulent to the ſtomach, as I have myſelf known it to do, though I believe that rarely happens, a ſmall portion of ſpirits, as rum or brandy,* or any of the other ſpirituous waters or tinctures, may be uſed without any diminution of its good effects. A tea ſpoonful of rum is mentioned to be taken with each doſe of the ſolution, in one of the caſes ſubjoined, and I have myſelf directed a ſmall quantity of tincture of cardamoms and of compound ſpirit of lavender, with evident advantage. Mr. Colborne has found hot milk in the proportion of about one fourth to that of the alkaline ſolution, to be a very grateful addition, eſpecially in cold weather, and what tended much to reconcile it to the ſtomach, and this without impairing in the leaſt its good qualities.

If the urinary paſſages are very ſore or tender, and the ſyſtem very irritable, it will be neceſſary to uſe opiates. Five, ten, twenty, or thirty drops of tincture of opium, or a proportionable quantity of the paregoric elixir,

* See Dr. Cooper's Caſe.

elixir, muſt be taken as neceſſity may require, once or twice a day during the uſe of this remedy. The opiate may be taken either juſt before, or juſt after the taking the alkaline water; but the quantity of the opiate ſhould be diminiſhed gradually, and at laſt totally laid aſide, when the pain and other urgent ſymptoms have either ceaſed or ſo far abated as not to cauſe any great uneaſineſs.

CASE I.*

Benjamin Colborne, Eſq. of this city, was, in the year 1760, attacked with a violent nephritic paroxyſm, which, after continuing ſeven or eight days, and being treated with anodyne, oily, and mucilaginous medicines and bleeding, terminated in the diſcharge by urine, of a red ſtone larger than a vetch or tare, after which he continued

* The Caſes before related, are here reprinted as in the former Edition. What is added is put in *Italics*. Where no addition is made to the Caſes before printed, no information has been received of the patient's health.

continued tolerably well for eight or ten months; often, however, obſerving ſmall calculous concretions to come away, attended with irritation of the urinary paſſages. In about ten months after the firſt attack, he had another, but neither ſo violent or of ſo long duration, which terminated like the firſt, in the diſcharge of a ſtone of a ſimilar colour to the foregoing, but of a ſmaller ſize. The nephritic paroxyſm again returned in about five or ſix months, but not ſo violent as at firſt. During this time he was in a courſe of taking mucilaginous and lubricating remedies.

After this he made trial of Mrs. Stephen's remedy, as prepared by Dr. D'Eſchernay, of which he took about an ounce in a day, once or twice a week.

After this he continued free of nephritic complaints about a year and a half. That medicine, however, agreed ſo ill with his ſtomach, producing nauſea, indigeſtion, and crudities, that he was obliged to leave it off. About three or four months afterwards he had another attack, which re-

turned again upon him every ten or twelve weeks. At this time he was in a courſe of taking an infuſion of the wild carrot ſeed, and drank diſtilled water as his uſual drink.

In the year 1766, he made a trial of Blackrie's lixivium (or Chittick's remedy), and though it agreed with him rather better than the ſoap, yet it was ſo cauſtic and irritating to the mouth and throat, and produced ſuch painful ſenſations in his ſtomach, that he was obliged to leave it off; after which his nephritic paroxyſm returned every eight or ten weeks as before. In the year 1774, he went to Spa for a complaint in his bowels, which he aſcribed to the uſe of his cauſtic lixivium, and during the time of his drinking theſe waters, had no return of calculous complaints; but on his coming back to England he was attacked as formerly.

In the beginning of the year 1778, he made trial of water ſimply impregnated with Fixible Air, which proved too irritating and diuretic. On March 27th of the ſame year, he had an attack of the gout, which

continued

continued on him until the 14th of April, when he was taken with a violent vomiting, attended with pain in the left kidney. By the help of the warm bath and bleeding, he paſſed another calculus. After this he had a ſecond attack of the gout, which continued a few days.

As ſoon as it was over he began the uſe of the alkaline medicine with Fixible Air, as above deſcribed, of which he took about ſix or ſeven ounces twice a day. During the uſe of this he parted with no gravel, his urine depoſited no ſediment whatſoever, or diſcoloured the veſſel, though if it was omitted even for a few days, theſe appearances took place, and ſmall bits of gravel were perceivable in his water.

From this time he continued in perfect health, and free of all nephritic complaints, until the 26th of Auguſt 1783, when, about three in the morning, he was taken with an irritation in the urinary paſſages, which prevented his ſleep; his urine however was not high coloured; about ſeven in the morning he had two purging ſtools;

he had but little pain in the kidney, but a heavy obtuſe ſenſation over the os pubis, which continued with ſome ſickneſs till about two o'clock, when the ſtone ſeemed to enter the bladder. From that time he became perfectly eaſy.

In order to diſcharge the ſtone from the bladder, he drank large quantities of mucilaginous liquors, and retained his urine as long as poſſible. About ſix in the evening he diſcharged a red calculus, ſmaller than what he had before done.

It is proper to obſerve, that he had been at Harrowgate about four or five weeks before this happened, and drank the Harrowgate water, which as it acted not only as a purgative, but as a diuretic alſo, he was induced to think he might ſafely omit the alkaline ſolution. It appeared however, to his great diſappointment, that the calculus was generated during that interval. From that time to the preſent, he has never, for two days ſucceſſively, omitted taking the mephitic alk. ſolution, and has never ſince felt the ſmalleſt uneaſineſs; no grains of ſand or other precipitation in the urine, nor any

any diſcolouration of the veſſel, except when the medicine is omitted for a day. But, upon taking the ſolution again, the urine made afterwards diſſolves the former diſcolouration, and ſtill continues perfectly clear. During the time he was ſubject to nephritic paroxyſms, his urine was ſubject to putrefy very ſoon, but ſince he has taken the ſolution it will keep three or four days in the warmeſt weather without ſhewing any ſigns of that diſpoſition. His general doſe as a preventative is about ſeven ounces daily. His health, ſtrength, and ſpirits, are all perfectly good; and, as he thinks, better than they were twenty years ago.

Since the above account was written, which is now about two years ago, Mr. Colborne has had two fits of the gout; the one ſlight, the other more ſevere, which laſt confined him for a fortnight. Both fits, however, went off perfectly well, without any tranſlation of the gout to the head, lungs, or any of the viſcera. He drank the mephitic alk. water, with the addition of a little brandy, during both the fits, and it agreed with him perfectly well.

His health, ſtrength, and ſpirits, are as good now as they were two years ago.

December 16, 1788.

Mr. Colborne has taken the mephitic alkaline water but once or twice in a week for four or five months paſt. Yet his chamber-pot has kept clean from any incruſtation or adheſions. He thinks that his appetite has been better upon the days he took the mephitic alkaline water. He has had more of the gout this November (1788) *than for three or four years paſt.*

CASE II.

Mrs. Southcote, a lady of this city, was firſt afflicted with complaints of this kind about the year 1754, when ſhe had an attack that laſted ſeveral days; after which, to her great ſurpriſe, ſhe voided a calculus, not having before apprehended the nature of her diſorder. She continued free from any complaint of the kind for about ten years, when, in the year 1764, ſhe had a return, and from that time the attacks

attacks recurred every ten or twelve weeks, accompanied with the diſcharge of numerous calculi: one, however, ſhe had reaſon to believe remained, and probably ſtill remains too large to paſs, which aggravated her pain, and produced blood on the ſlighteſt motion. The pains in the kidneys, nevertheleſs, ſtill continued, and the laſt paroxyſm ſhe had of this kind, which was in 1779, was ſo violent, that her life was deſpaired of for ten or twelve days. At laſt, however, after taking large quantities of oily and mucilaginous remedies, the free uſe of opium, and the warm bath, an oblong ſtone was diſcharged about the ſhape and ſize of a large orange ſeed. As ſoon as ſhe had recovered a little ſtrength after this ſevere attack, ſhe began, in the ſame year, to make trial of the aqua mephitica alkalina, taking ſix or ſeven ounces twice a day, which ſhe ſtill perſevered in. Since that time ſhe has had no more nephritic attacks; has parted with no calculi, and her urine continues clear and free of ſediment. She often feels a ſenſation of weight, and ſome uneaſineſs in her bladder, but never has any bloody water, bears ex-

erciſe well, is able to walk for an hour or two at a time, and uſes a carriage almoſt daily without pain or aggravation of uneaſineſs. Her general ſtate of health, though valetudinary, has been much better ſince the trial of this remedy than before.

Since the above caſe was drawn up, and ſent to the printer, I have received the following account:

"In the beginning of Sept. (1784), Mrs. S. went into Berkſhire, where ſhe continued three weeks. Soon after her arrival ſhe was ſeized with a feveriſh complaint, which occaſioned her to omit the alk. ſolution, which ſhe not only diſcontinued during her ſtay in the country, but for a month after her return to Bath. During this interval, ſhe began to feel ſome uneaſineſs in her left kidney, on which ſhe again commenced the uſe of the remedy once a day. On Dec. 27th laſt, ſhe was ſeized with pain and other ſymptoms attending the paſſage of a calculus; which, after a painful night, came away about nine

the

the next morning. It was about the ſize of a pea; ſhe ſoon recovered, and is now well and eaſy."

It is her opinion, and appears highly probable, that this calculus was formed during the time of the remedy's being omitted. Mrs. Southcote has had no return of her nephritic complaint, and is able to walk and bear the motion of a carriage without the leaſt pain or inconveniency; but feels ſometimes an uneaſy ſenſation in the bladder, and believes ſhe has two calculi formed there. April 30, 1787.

Since the above account was publiſhed, Mrs. Southcote had two attacks of the apoplexy, the laſt of which carried her off after a ſhort illneſs on January 1ſt, 1788, *aged* 68 *years. Her body was opened by Mr. Symons, an eminent ſurgeon of this place. Her liver was found in a putrid ſtate; the gall bladder of the ſize of a hen's egg, and its coats a full quarter of an inch thick. In the middle of the cyſtic duct was lodged a biliary calculus of the ſize of a child's marble, which might be preſſed back into the gall*

gall bladder, but not forwards. The bladder and kidneys were perfectly ſound, and free from any calculous concretion of any kind.

CASE III.

The Reverend Dr. Cooper, of Sunning, in Berkſhire, a moſt worthy and amiable character, is likewiſe a remarkable inſtance of the efficacy of the neutralized alkaline ſolution.

But this gentleman's caſe is related by himſelf, in a letter to my late friend, with ſuch accuracy and propriety, as well as animated deſcription, ſuggeſted by the memory of feelings too ſevere to be eraſed, that I cannot forbear giving it to the reader in his own words; ſubjoining alſo a confirmation of the benefit he had received, and of his preſent good ſtate of health, extracted from a letter I myſelf had the pleaſure lately to receive from him. One trivial circumſtance I will take the liberty to remark, that Dr. Cooper, in one part of his letter to Dr. Dobſon, ſeems to have thought that the aq. mephitica alkalina, or

alkaline

alkaline ſolution ſaturated with Fixible Air, was recommended in the Medical Commentary, as a remedy for calculous diſorders, whereas it is only recommended there as containing a large quantity of Fixible Air, which was to be ſet looſe by a ſubſequent addition of an acid, which was directed to be taken immediately after the exhibition of the alkaline ſolution. It does not appear that Dr. Dobſon, at the time he compoſed the Medical Commentary on Fixed Air, was at all acquainted with the good effects of the alkaline ſolution thus impregnated in theſe complaints. Though he recommends its uſe, it is only with a view to its immediate decompoſition by an acid. The remedy, however, from which Dr. Cooper received benefit, was, as appears from his own account, the alkaline ſolution ſaturated with Fixed Air, without any other addition; though he occaſionally made uſe of the effervescent ſaline draught, when a machine for impregnating the water with Fixed Air was not at hand.

The Rev. Dr. Cooper's *Letter to* Dr. Dobſon.

" Dear Sir,

" It gives me great pleaſure to hear you deſign taking up the pen again in favour of *Fixed Air*. The efficacy of that volatile principle (when combined with ſome alkaline ſalt) in putrid and other diſorders, is ſufficiently manifeſted in your very ingenious Commentary on that ſubject; and nothing now is wanting completely to eſtabliſh its character, than the making better known to the world its ſuperior virtues in nephritic complaints alſo. Of this ſuperiority, I am ſenſible, you have ſeveral proofs before you, even in this place, and ſome of them much ſtronger than perhaps my caſe may be; nevertheleſs, if *that* can in the leaſt degree promote the cauſe of truth, and aſſiſt your benevolent deſign, it is moſt heartily at your ſervice. Indeed, I feel myſelf under ſo great obligations to the virtues of *Salt of Tartar and Fixed Air*, for reſcuing me from a ſtate of miſery and pain, and reſtoring me to the full

enjoyment

enjoyment of health and eaſe, that it would appear the higheſt ingratitude in me to be ſilent, whenever it is in my power to do juſtice to their worth.—It was in the beginning of Auguſt 1772, if I recollect right, that I was firſt attacked with what is called, a fit of the gravel, which laſted about twelve hours; *hinc mihi prima labes.* As I had till then been quite a ſtranger to the nature as well as ſymptoms of the diſorder, I was at a loſs how to account for the ſickneſs and pains I felt, till a ſmall ſtone, which came away, too well convinced me from what cauſe they aroſe. The continual apprehenſions I now was under, of having a return of thoſe pains, and the dread I entertained of being afflicted with a complaint which I had always heard ſtyled the *opprobrium medicorum*, deſtroyed every comfort, and imbittered every hour of my life. I did not fail, however, you may be ſure, Sir, having recourſe to the beſt advice I could find, and took care ſcrupulouſly to adhere to every rule and every method of cure preſcribed me. I ſoon perceived, nevertheleſs, with great concern, that my diſorder, inſtead of abating,

abating, gradually increaſed, conformable to the juſt obſervation of Mr. Pope, that

" The young diſeaſe, which muſt ſubdue at length,
" Grows with our growth, and ſtrengthens with our
" ſtrength."

I now continually voided great quantities of ſand, or rather, of very ſmall ſtones of a bright red colour; and, at the diſtance of every two or three months, and ſometimes oftener, when a larger ſtone was formed than could eaſily paſs the ureters, I underwent the moſt excruciating torments before it reached the bladder. The paroxyſms, at theſe times, laſted full thirty hours, and once or twice much longer, attended with an acute burning pain in the region of the kidneys and round the abdomen, a numbneſs down my thighs and legs, a conſtipation of my bowels, with violent ſickneſs at my ſtomach. Caſtor. oil, fomentations, emollients, and warm bathing, which uſed before to afford me eaſe in common fits, here often failed of ſucceſs, and nothing but opiate draughts could adminiſter the leaſt relief. Nor did my ſufferings always terminate with the ſtone's being at length ſafely lodged in the

bladder; for twice, in its endeavours to paſs the urethra, the ſtone unhappily remained fixed there for ſeveral hours, and conſequently brought on again an intolerable pain, with a total ſuppreſſion of urine. To attempt giving an idea of what I felt on thoſe occaſions, is beyond the power of words; even at this diſtance of time, while I am now writing, *animus meminiſſe horret*—it is to be conceived only by thoſe, who have had the misfortune to be afflicted with the ſtone.

" As I was convinced that the milder remedies, which I had hitherto followed, were unable to prevent a frequent return of theſe paroxyſms, I determined to have recourſe to more violent ones, ſuch as *lixiviums* and *ſolvents*. Of the former, I preferred that recommended by Mr. *Blackrie*, known before by the name of *Chittick's Receipt for the Stone*. This I took regularly for four months, ſtrictly obſerving the rules laid down with it. I do not remember I had any very violent attack of my complaint, during the courſe of this medicine; but it ſometimes occaſioned me

to

to make bloody water, and I continually voided a good deal of gravel. Perceiving, however, that my health, ſpirits, and appetite began to be affected by the ſeptic regimen, enjoined to aſſiſt the operations of the lixivium, I thought it high time to leave it off; and ſoon after had the additional mortification to know, that, whilſt every thing elſe, that could render life an object of deſire, was about to leave me, my calculous complaints remained firm and rooted as ever.

" From this cauſtic medicine, I turned my eyes to *Perry's Solvent*, which, as I found its character and virtues came ſtrongly recommended to the public under the ſanction of many very reſpectable names, I lamented I had not thought of ſooner, and conſidered all the time as thrown away, which I had hitherto beſtowed on other remedies. My application, however, to this boaſted medicine, was followed by no better ſucceſs than what had attended me before; for at the end of three months, during which time I took it, I found all my fond hopes and expectations at once de-

ſtroyed

ſtroyed by one of the ſevereſt fits of the ſtone I had ever felt. Willing to give this celebrated ſolvent the faireſt trial, I perſevered in the uſe of it long after I found it by no means ſuited to my conſtitution, for it induced ſuch a coſtive habit of body, as rendered my life very uncomfortable, and ſometimes was indeed quite alarming.

" It would be difficult, as well as tireſome, to endeavour to enumerate the variety of other noſtrums, which, during the courſe of full ſeven years, I was perſuaded to ſwallow;

" Non, mihi ſi linguæ centum ſint, oraque centum,
" Ferrea vox, omnes poſſim comprendere formas."

Let it ſuffice to ſay, that finding from none of them any other kind of benefit than temporary ſuſpenſions of pain, I quite deſpaired of ever meeting with any thing that would afford me eſſential and permanent relief. At length, however, in the beginning of April 1780, a friend of mine put into my hands your publication, before-mentioned, on Fixed Air: pleaſed

with the account given in it, of the many cures performed by *that* and *ſalt of tartar*, on putrid and other diſeaſes, and with the great probability of the ſucceſs of theſe combined articles in nephritic complaints, as likewiſe encouraged by the eſtabliſhed character and reputation of its amiable author, I determined immediately to make trial of this extraordinary medicine; and accordingly provided myſelf with a Fixed Air machine, and apparatus neceſſary for the purpoſe.

"About the middle of the ſame month I entered on a courſe of the Medicated Water and Fixed Air, taking it in the form and quantity preſcribed as in your pamphlet, and ſoon had great reaſon to congratulate myſelf on my undertaking; for in about a fortnight's time I perceived a very ſenſible alteration in myſelf, as well with reſpect to my complaint in particular, as to my health in general. The latter I found greatly mended both in my ſpirits and appetite; and the uneaſy ſenſations of the former, about the kidneys, were intirely removed. I no longer voided either

ſand

ſand or gravel; nor did I feel that continual irritation to make water, which I did before; nor was my ſleep diſturbed by ſuch frequent, yet fruitleſs, calls to it; in ſhort, from the happy enjoyment of eaſe and comfort, to which I had ſo long been a ſtranger, I now ſeemed to myſelf quite a new creature.

"I purſued this method about four months, when my farther progreſs in it was ſtopped by a feveriſh attack, which confined me for three weeks. As ſoon as that was removed, I had recourſe again to the *Salt of Tartar* and *Fixed Air*, and have continued it, with but little interruption, ever ſince. I can aſſure you, Sir, with the greateſt truth, that from the time I began taking this medicine, to the date of the preſent writing, I have never had any the leaſt return of my complaint, excepting once, about two years and a half ago, I voided a ſmall ſtone, without pain, about the ſize of a little pea, or vetch, quite ſmooth, and almoſt perfectly round. I have moreover, in every other reſpect, enjoyed an uninterrupted ſtate of good health.

When I am on a journey, or abſent from home, when I cannot be ſupplied with a Fixed Air machine, I neutralize each doſe of the medicated water (ſweetened with a little ſugar) with juice of lemons, before I take it, which has the ſame effect as the mephitic acid.

" With regard to regimen, I confeſs, I obſerve none, except the avoiding every thing ſalted or dreſſed too high. No other reſtriction of diet can be neceſſary with a medicine, whoſe virtues ſeem beſt aſſiſted by thoſe things which are, at the ſame time, moſt ſalutary and agreeable to the nature and conſtitution of the human frame, ſuch as wine, milk, fruits, vegetables, and the like. On this account, the medicine in queſtion has certainly great advantages over thoſe of the cauſtic kind; for the ſame reaſon, perhaps, it may be ſuppoſed to yield to them in *ſolvent powers*. Nevertheleſs, if, as experience ſhews, it *prevents* the *formation* of thoſe ſubſtances in the kidneys and bladder, which form the *human calculi*, or the *increaſe* of them after they are formed, its claim to merit as a *preventative*

tative is equally great; at the ſame time, when its perfect innocence, nay even beneficial effects on the conſtitution, are taken into conſideration, few people, I believe, will heſitate to pronounce the *Medicated Water* and *Fixed Air* ſuperior to all other medicines hitherto recommended for nephritic complaints. A fair trial of them for three years, will, I hope, fully juſtify me in aſſerting this ſuperiority; and if health, eaſe, and comfort, are bleſſings we all covet and deſire, the having reinſtated me in the happy enjoyment of them, when well-nigh loſt, muſt ever intitle the *Salt of Tartar* and *Fixed Air* remedy to my ſincereſt thanks and moſt grateful acknowledgments.

I am, dear Sir, with the trueſt eſteem,
Your very obedient,
and very humble ſervant,
EDWARD COOPER.

Bath, April 16th, 1783.

"N. B. I forgot to mention, that, in the ſpring of the year 1782, I was ſeized with a fit of the gout in both my feet, which confined me full three weeks; nevertheleſs, I ſtill continued the uſe of my medi-

cine, adding only to each doſe about half a tea-ſpoonful of rum, nor did I find the leaſt prejudice or inconvenience from it.

Extract of a Letter from the Rev. Dr. Cooper *to* William Falconer, M. D. *dated* Dec. 18, 1784.

"All that I have farther to add now, reſpecting myſelf, is, that I ſtill continue as well, and as free from any return of my complaint, as I was when I drew up my caſe in April 1783. I conſtantly perſevere in the uſe of the alkaline ſolution with Fixible Air, drinking once or twice a day, as it happens, about two ounces of the Medicated Water, which never fails acting as a preventative, and keeping me intirely free from every the leaſt ſymptom of gravel or ſtone; though I have great reaſon to think, from the pain I have formerly felt in the region of my kidneys, that a ſtone is formed in one of them."—

It may be neceſſary to remind the reader, that the quantity of alkali contained in the

the ſolution uſed by Dr. Cooper, is double to that uſed by Mr. Colborne; ſo that the two ounces mentioned in Dr. Cooper's letter as his daily doſe, are equal to twice that quantity of the ſolution directed in the former part of this Work.

Extract of a Letter, dated April 1, 1787.

"My health is, I thank God, full as good as when you laſt heard from me, nor have I had any, even the leaſt, return of my old complaint, which I can attribute to nothing but my perſevering in a courſe of the above-mentioned medicine. I purſue the ſame method of taking it that I have done hitherto, excepting that now, I have ſeldom recourſe to it above once a day, inſtead of twice, which I formerly had. The effects of it as a preventative I find equally powerful as they have ever been, and long experience has fully convinced me that this medicine is no leſs innocent, than it is ſalutary to my conſtitution. It is true indeed I have had two fits of the gout, the one in September 1785,

and the other in January 1787, but in neither did I desist from taking the Aqua Mephitica Alkalina. On the contrary, I continued it during the whole time of both those severe visitations, and, with the precaution of adding a tea-spoonful of rum or brandy to each dose, found it sit quite easy and comfortable on my stomach."

The following is an Extract from a Letter I received from Dr. Cooper, *dated* November 26, 1788.

"*To answer more particularly your inquiries concerning my present state of health, I have the pleasure to assure you that it is full as good as when I saw you last winter at Bath, 'bating the somewhat farther advance in age, and its attendant infirmities. I believe I then told you, that for the whole preceding Summer, and great part of the Autumn, I had been afflicted with a very painful and dangerous illness; and that, during my confinement under it, which lasted near five months, I was obliged to abstain from*

from the Aqua Mephitica Alkalina. I found however no inconvenience from the diſuſe of it, either by any return of pain in my kidneys, or any other (even the leaſt) hint of a gravelly complaint. Since that time, I have again entered upon a courſe of that medicine, but neither in ſo large a quantity, nor ſo frequently repeated as before, as I now take it once only in the day, and that not regularly. Beſides, whenever buſineſs or engagements call me from home, I oftentimes omit it for a fortnight together, and find myſelf juſtified in this omiſſion by a total freedom from every ſymptom of, or tendency to, either the ſtone or gravel. Should I unfortunately find any hints of either of theſe ſufficient to alarm me, I ſhould immediately increaſe my doſe, and be more attentive to the frequent and regular returns of taking it; nor have I the leaſt doubt, but that the virtues of the Aqua Mephitica Alkalina would ſoon diſperſe every anxious fear and uneaſy foreboding."

CASE

CASE IV.

A reſpectable perſon of this city, who deſired his name might not be made public, aged 65, of a habit of body eſteemed to be ſcorbutic, had been for ſeveral years accuſtomed to the uſe of medicines that acted upon the urinary organs, as expreſſed juice of millepedes and tincture of cantharides.

About three years ago he was ſeized with a conſiderable degree of pain in the urinary paſſages, and in the rectum. He likewiſe voided ſeveral ſabulous concretions, ſome of the ſize of a pepper-corn, or vetch, and had frequent returns of bloody urine, in which the proportion of blood was often ſo large as to coagulate nearly in the ſame manner as if it was recently drawn from the arm. Great pain, as may well be ſuppoſed, attended theſe evacuations. For theſe ſymptoms he took, by advice, Blackrie's lixivium, from forty to eighty drops, thrice a day, in veal broth or onion pottage, and made a large uſe of onions alſo in his diet.

His pains and bloody urine increaſing under this regimen, he was induced to make trial of honey, which he took to the quantity of near half a pound daily, ſtill continuing the uſe of the lixivium. The honey ſeemed to act as a ſtrong diuretic, and to aggravate his pain ſo much, as to render it neceſſary to be laid aſide, as well as the lixivium. He then made trial of water, ſimply impregnated with Fixible Air, for about a month, but without any ſenſible relief.

He next, by Mr. Colborne's advice, entered upon a courſe of the alkaline ſolution impregnated with Fixible Air, ſimilar to that above deſcribed, which he commenced ſomewhat more than two years from the preſent time, taking eight ounces of it thrice every day. In leſs than three weeks after his firſt taking it, he experienced the moſt eſſential benefit; his pains abated, his urine became clear and of a natural colour, without any ſubſidence or precipitation; and his health (ſome ſlight pains, occaſionally returning, excepted) nearly reſtored.

It

It is proper to remark, that the cauſtic lixivium appeared to have very bad effects on the ſyſtem, by diſpoſing the humours of the body to a putrefactive ſtate, which was inſtanced in ſeveral reſpects, and particularly by frequent hæmorrhages from the noſe, that occurred during its uſe; a thing he was never before ſubject to, and which has not occurred ſince the lixivium has been laid aſide.

For the laſt year and half he has made no bloody urine, has had no pain in paſſing it, and has voided no calculous concretions. For the laſt ſix months he has taken only four ounces three times a day, which is but half the original quantity. It has operated as a gentle aperient, giving one motion daily, but no more, and thus ſupplying the want of an aloetic pill, which he was formerly obliged occaſionally to have recourſe to. It had not, however, any ſenſible effect as a diuretic.

His appetite and health in general have been very good ſince the uſe of the medicine. He is now of a healthy and ruddy

complexion, hale and ſtrong in his body, appetite and ſpirits good, bears exerciſe well in a carriage, and is able to walk five or ſix miles at a time without fatigue, or any other inconvenience, and generally walks as far daily, whenever the weather will admit of it. I had the ſatisfaction this day (April 14, 1787) of ſeeing the perſon whoſe caſe is here deſcribed. He is in perfect health, and ſtrong and active for his years, and has had no return of any calculous complaints theſe two years. He has continued, and ſtill continues to take regularly every day, the mephitic alkaline water.

The perſon whoſe caſe is here related, continues to take the mephitic alkaline water occaſionally, but not conſtantly; and is quite free from his former complaints of the calculous kind.

CASE V.

The Honourable and Reverend G. Hamilton, of Taplow, in Buckinghamſhire, a gentleman

a gentleman between 60 and 70 years old, is another inſtance of the efficacy of this remedy; as appears from the following extract from a letter of his to George Burges, Eſq. of this city, and by him communicated, with the conſent of Mr. Hamilton, to Dr. Dobſon.

"I had been troubled with a ſtone in my bladder about five years, during which time I took various ſolvents without any effect. In the ſpring of the year 1780, Mr. Pott extracted a ſtone weighing two ounces; ſince that time I have been free from pain, but at times perceived gravel in my water, and now-and-then pieces large enough to make me apprehend the forming of another ſtone. In the winter of the year 1781, I was at Bath, and very fortunately became acquainted with Dr. Cooper. He had been troubled with my complaints, and was taking a medicine he ſtrongly recommended to me. He ſaid, he had taken it near two years, to the beſt of my remembrance, during which time he had avoided the uſual ſymptoms of this complaint. It was water impregnated with

Fixed

Fixed Air, to two quarts of which he put two ounces of ſalt of tartar. He took a ſmall quantity of this twice a day, in which he put ſome ſugar, and about two tea ſpoonfuls of juice of lemons. He very kindly treated me with a glaſs whenever I called upon him; and as ſoon as I returned to Taplow, I ſent to town for a Fixed Air apparatus. I got it in January 1782, and immediately entered on the courſe preſcribed by Dr. Cooper: only that I drink his two doſes at once, and put the juice of half a lemon into mine, as my ſtomach agrees well with acids. Since I have taken this, I have voided no gravel; nor have I ſeen any fur on the chamber-pot, its uſual forerunner.

"If this account may be of any ſervice to Dr. Dobſon, or his patients, he is welcome to make what uſe he pleaſes of it, for I may ſay with Dido,

"Haud ignara mali," &c.

Dated Taplow,
Apr. 8, 1783.

The

The following is a Copy of a Letter I lately had the pleaſure of receiving from Mr. Hamilton.

SIR, Taplow, April 10, 1787.

"YOUR letter of the 7th reached me this morning; in anſwer to which I can inform you, that I continue taking the Fixed Air and Salt of Tartar, and think I find benefit from it. I this winter had occaſion to conſult Dr. Warren for ſome complaints, the chief of which was loſs of appetite. He adviſed me to leave off my medicine whilſt I was taking his preſcriptions; I did ſo for ſome weeks, till I found ſome ugly pains in my back occaſioned by ſome very ſmall ſtones. This alarmed me, and made me return again to my Fixed Air, which ſoon relieved me. I recommended it ſome time ago to a Mr. Wood, my hoſier in Piccadilly, and to Mr. Charteris at Eton, and they both aſſure me they have found great benefit from it. I forgot to mention that I voided three of the ſmall ſtones above-mentioned. If what I have ſaid will be of any ſervice, you are welcome

come to inſert my letter in the new publication you have in hand.

I am, Sir,

Your obedient humble ſervant,

G. HAMILTON."

Mr. Hamilton is ſince dead; but, as I hear, had no return of any calculous complaint.

CASE VI.

William Ainſlie, Eſq. of this city, a gentleman between 80 and 90 years of age, accuſtomed to take much exerciſe, in hunting particularly, was ſeized in the year 1780 with a pain and irritation in the urinary paſſages, accompanied with a diſcharge of blood. This continued eight or nine days, but without his paſſing any gravel or ſand.

He continued tolerably well (though not without frequent irritations of no great conſequence, in which, however, nothing of a calculous nature was voided) until Auguſt 1781, when he was again

ſeized with violent pain and irritation, accompanied with bloody urine, which came on after exerciſe on horſeback. After ſome time his urine became clear, but a violent irritation remained for two or three days longer; nothing, however, of ſtone or gravel came away.

In January 1782, he came from Dorſetſhire to Bath in a chaiſe, the motion of which renewed his complaints, the irritation particularly, to ſuch a degree, as to make it difficult for him to reach the end of his journey. Soon after his arrival at Bath, he was adviſed to a trial of Adams's ſolvent, of which he took ſomewhat more than a guinea bottle; during the taking of which he thought himſelf ſomewhat better, the irritation being rather diminiſhed: but towards the latter end of February he was ſeized with a great bleeding at the noſe, which continued 48 hours, with the loſs of ſome quarts of blood.

The phyſician he conſulted on this occaſion adviſed him to leave off the medicine; but from that time the leaſt motion

brought on pain, irritation, and bloody urine, ſo as to oblige him to ſtir out as little as poſſible, ſince even the motion of a ſedan chair brought on the above ſymptoms.

In this ſtate he continued, although he was ſtill in the courſe of taking various mild lubricating things, and laudanum occaſionally, to abate the pain, until about the beginning of April 1783, when he was adviſed to begin a courſe of the alkaline ſolution ſaturated with Fixed Air, which he took to the quantity of eight ounces twice a day. He had not taken it more than five or ſix days, before he found benefit: his pain abated, he became able to walk a little, but much motion ſtill brought on a return of bloody urine, and the other ſymptoms, but leſs in degree, and of a ſhorter continuance than formerly.

By the beginning of May he was ſo well recovered, as to venture to take a journey in a poſt-chaiſe into Dorſetſhire. The firſt day of his journey he travelled about 25 miles; and the roads being very

rough, and the carriage uneaſy, brought on a return of his pain and bloody urine. He however went forward about 15 miles the next day, and the roads being better, and the carriage eaſy, felt no inconvenience. The next day brought him about 25 miles farther, to the end of his journey, where he arrived in perfect eaſe and health.

About the twentieth of May he began to diminiſh the quantity of his medicine, taking it once a day only. From this time he remained perfectly well until the beginning of Auguſt, when he had a very ſlight return of pain, which ſoon ceaſed. In October following he was able to ride a horſe gently for an hour and a half together without much pain or uneaſineſs; and his water was then, and had been a long time, of a natural colour, plentiful in quantity, and voided without pain or uneaſineſs.

Mr. Ainſlie died on the fifth of May 1786, aged 87 years, of a peripneumonic complaint contracted by expoſure to cold, but

but without any ſymptoms that could be aſcribed to calculus, or any diſorder of the urinary paſſages.

CASE VII.

Mr. John Rolfe of Ameſbury, in Wiltſhire, was attacked in May 1779 with a fit of the gravel, which laſted near two months, and was at times very painful, and attended with ſickneſs, vomiting, and loſs of appetite, which continued until a calculus as large as a vetch came away. He then grew better, and recovered his appetite. Between the time above mentioned, and the year 1784, he had frequent returns of the ſame complaint, which cauſed ſickneſs and vomiting in him for a day, and ſometimes for two or three days before the gravel came away, which ſometimes would be nearly as large as a barley-corn. He drank on theſe occaſions an infuſion of marſh-mallow roots, with gum arabic, and other mild ſoftening ingredients, and took caſtor oil occaſionally. On Saturday Nov. 13, 1784, after being warmed with hunt-

ing, he became on a ſudden cold and chilly, with aching pains ſimilar to thoſe of the rheumatiſm in his ſides, breaſt, back, and limbs, which continued ſeveral days, and ſeemed rather to increaſe. On the 22d of the ſame month he felt ſome pain in his ſtomach and bowels, and applied on that occaſion to his apothecary, who gave him ſome opening phyſic, which operated very properly downwards, but cauſed ſickneſs and vomiting. This induced him to think his diſeaſe to be of the bilious kind; and in conſequence thereof he took ſome remedies which gave him ſome relief, but did not remove the pains in his back, breaſt, &c. Having at that time ſome buſineſs in Dorſetſhire, he thought the journey might be of ſervice to his health, and on Thurſday the firſt of December he went to Saliſbury, and from thence to his friend's houſe in Dorſetſhire, which was about thirty miles diſtant from the laſt-mentioned city. This journey, which he performed in one day on horſeback, increaſed his pain ſo much, that it was with difficulty he got to the end of his journey. The next day he was better, but not free

from

from the pains above-mentioned, his appetite alſo was very indifferent, his body coſtive, and his ſtools hard and black. In this ſtate nearly, he continued until the tenth of December, on the evening of which day he was ſeized with ſickneſs at his ſtomach, and a vomiting of blood in conſiderable quantity: the night following he was again ſeized with the vomiting of blood, on which Dr. Pultney of Blandford was ſent for, who recommended to him ſome medicines, that ſtopt the bleeding. He continued at his friend's houſe until the laſt day of December, when he returned home, with his pains much as before, and his health very indifferent. After he had been at home about eight or ten days, he paſſed a ſtone much larger than any he had before done, being of the ſhape of a barley-corn, but larger. After this he found his health and appetite better. After a few days however his ſtomach became again painful, ſore and tender, and often ſubject to vomiting, and it was with difficulty he could bear the motion of a poſt-chaiſe. His complaint being now judged to be a combination of bile, rheu-

matiſm, and gravel, he was ordered to Bath, where he arrived May 5, 1785. Dr. Adair was ſent for a few days after his arrival, who directed him ſome medicines, and a cautious trial of the Bath waters. His health however not improving, his medicines were altered, and a bliſter applied to the ſtomach, which ſoon became eaſier in reſpect of pain, but his other pains in the back, breaſt, &c. remained as before, and his ſickneſs and vomiting continued. Dr. Falconer was conſulted about this time, who, in conjunction with Dr. Adair, adviſed him to try the alkaline water with Fixible Air, to be taken in the quantity of a pint a day, divided into three doſes, and to uſe the warm bath twice a week. He had not taken the alkaline water above two or three times, before he found his appetite mended, and his pains rather abated. After continuing this courſe for three weeks, his ſtomach became ſettled, his appetite returned, his ſickneſs left him by degrees, and his vomiting ceaſed entirely; and from that time he continued in perfect health, and free of all gravelly complaints. During the laſt illneſs that he had, his urine

was of a deep colour, and notwithſtanding he made but a ſmall quantity in the courſe of a night, it left a great ſediment in the veſſel. But from the time he began to drink the alkaline water, his urine became pale, came away freely, and in large quantity, and left not the leaſt fur or diſcolouration on the veſſel. *The above account is taken from a letter of* Mr. Rolfe *to me, and expreſſed as nearly as poſſible in his own words. The letter is dated from* Ameſbury, *Oct.* 19, 1785.

I have, ſince the time above ſpecified, had the pleaſure of the following account from Mr. Rolfe, *dated* Ameſbury, *Jan.* 30, 1787:

"I ſhould ſooner have given you a line reſpecting my health, had it been otherwiſe than well. It is at preſent ſo good, that I do not remember it to be better; though I have voided a ſtone in the courſe of the laſt ſummer, in a decayed and crumbling ſtate, as it fell to pieces by the preſſure of my fingers. I account for my having this ſtone by my having in April laſt

laſt broken my glaſs apparatus, and my not being able to get another for the ſpace of a month; and in this interval I apprehend the ſtone was generated. I ſtill continue the alkaline water impregnated with Fixible Air, taking about one third of a pint three times a day."

CASE VIII.

Lieutenant-colonel Gould, aged 55, formerly of the third regiment of guards, was ſubject to gouty attacks at little more than thirty years of age, which have, at intervals, attacked him ever ſince. About 19 years ago, he was taken with frequent ſtoppages of urine, that would ſometimes continue three or four hours, and were not relieved but by the uſe of a bougie, which he was obliged frequently to have recourſe to, and once even to wear one conſtantly for two months together. Theſe fits at firſt had long intervals, but of late years have become more frequent. His urgings to make water were ſo frequent, that the retaining of it was very difficult, and often impracticable,

impracticable. His urine was moſtly turbid, and had a ſtrong tendency to putrefy, and had an evident fœtor of that kind when voided. He uſed alſo to paſs a large quantity of mucus in his urine, inſomuch, that it would ſtand nearly one inch deep in the pot, when there was no more than a pint and half of water. He has at times paſſed red gravel, but never any of ſuch a ſize as could be called a calculus. He had conſiderable pain and ſenſation of weight in the hypochondria, which ſometimes extended to the back. At the time of making water he had an inclination to go to ſtool. When the gout was in the extremities, he was generally free from theſe complaints. About March laſt, 1785, he made trial of a vegetable diet of rice milk, maſhed potatoes, turneps, &c. and drank no fermented liquor, but barley water only. After continuing this regimen about three weeks, he was ſeized with a ſmarting pain in the urethra, and paſſed about half a pint of blood daily for two days ſucceſſively. Opiates, ſpermaceti draughts, with a change of diet to one of animal food, and the moderate uſe of wine, relieved theſe ſymptoms, which

which were followed by a ſlight fit of the gout. During the ſummer, air, and moderate exerciſe on horſeback daily for ſix weeks, amended his general health, but his urine ſtill continued turbid and fœtid. About the latter end of Auguſt laſt, he had a ſlight, and favourable fit of the gout, which laſted about three weeks. His urine, however, continued as before. On Friday, October 7th, he began, by Mr. Colborne's advice, to take the Aqua Mephitica Alkalina, of which he drinks about one third of a pint twice a day: he takes it with a little hot milk, and it agrees perfectly with his ſtomach. His hours of taking, are about two in the afternoon, and about ſix in the evening. It tends to keep the body regular as to ſtools, but has no farther purgative effects. It has ſhewn no ſtimulating effects upon the urinary paſſages, as his wants in that reſpect are much leſs frequent than formerly. In five days time after he firſt took it, his urine began to grow clear, and void of mucus, or fœtor; and to be eaſily retained. He can now keep it three or four hours, and paſſes it, though not without pain, with much leſs

than

than he formerly did. It is of a moderately pale amber-colour, void of ſmell, and will keep twenty-four hours, and probably would much longer, without ſuffering any change, and leaves no fur on the chamber-pot. His health and appetite are much better ſince he took this remedy, and his ſtrength and ability to walk much improved. His regimen of life has been fiſh or plain meat, with half a pint of red port wine, or perhaps more, and it has agreed well with him. He has taken fruit at times, but thought it diſagreed with him.

The above account was taken down from Colonel Gould's own mouth in the month of January 1786. But although the mephitic alkaline water gave great relief from pain by abating the acrimony of the urine; yet it appeared that the bladder and urinary paſſages, and indeed the conſtitution itſelf, were ſo injured and weakened by ſo many repeated attacks in a long courſe of years, as to be irremediable. He died of an internal mortification at the latter end of 1786.

CASE

CASE IX.

Mr. Francis Loftus, of Market-Weighton, in Yorkſhire, a perſon of ſixty-ſeven years of age, and good conſtitution and general ſtate of health, except with regard to this particular complaint, had been twice cut for the ſtone, the laſt of which operations was performed ſomewhat more than eight years previous to the writing of his firſt letter to Benjamin Colborne, Eſq. which bears date Jan. 27, 1786. He there mentions that he is ſatisfied that another is formed in his bladder, and though he does not there mention the ſymptoms that induced him to be of that opinion, it may reaſonably be preſumed that he muſt, from ſad experience, be ſufficiently qualified to decide upon ſuch a queſtion. Having ſeen in one of the monthly publications an account of the ſucceſs of the Aqua Mephitica Alkalina, he made trial of it according to the receipt there put down, which by miſtake directed two ounces of ſalt of tartar inſtead of one, to be diſſolved in two quarts of water. This he tried for near ſix weeks to

a pint

a pint and half daily, but without any abatement of his ſymptoms, ſave that his water, which was before turbid, and depoſited a ſediment that adhered to the veſſel, became almoſt clear.

Mr. Colborne, however, having informed him of the miſtake in the printing the receipt, and adviſed him to make trial of a ſolution of half the ſtrength only, he in his next letter, dated March 7, 1786, gives a more favourable account. His pain in paſſing his water was abated, and he was able to retain it longer. He adds in this letter, that the ſtone was an hereditary complaint in his family, that his father had it, but did not live to be cut. His next letter, dated June 7, 1786, contains little more than an account of his farther amendment in general terms, and a confirmation from examination of his having a calculus formed in his bladder. His urine, he adds, is ſtill rather fœtid. His next letter, dated July 25, 1786, gives a much more favourable account. He there deſcribes his pains as having ſubſided, his urine having loſt its fœtor, and his health being perfectly reſtored.

ſtored. He adds, that he could then walk three or four miles *with a great deal of eaſe.* He had alſo left off his opiate as being unneceſſary. The mephitic alkaline liquor he ſays never purged him, but kept his body moderately open.

His next letter, dated October 6, 1786, confirms the opinion of the efficacy of the medicine. He there ſays that his health is ſtrong and good, and ſuperior to what could be expected at his time of life, and that he had juſt walked four miles without the leaſt inconvenience. A ſubſequent letter, dated January 9, 1787, is to the ſame purpoſe. He expreſſes himſelf as being "in great good health and ſpirits, and ſurpriſingly ſtrong, quite free from pain, and able to walk three or four miles with pleaſure." He adds, that he now takes the water only twice a day, and finds that to anſwer his purpoſe perfectly well.

In a Letter to Mr. Colborne, *dated* December 6, 1788, Mr. Loftus *expreſſes himſelf in the following manner:*

"*I have*

" I have never neglected taking the alkaline water one day ſince you heard from me, but have diminiſhed the doſe to half a pint taken once a day. You will ſay then I am ſtrong; and ſo I am, as I can walk four or five miles a day with pleaſure, and can alſo ride on horſe-back. I never ſee any fragments in the pot; but ſomething like ſmall rags, and a red ſharp ſand ſticks to the bottom and ſides; I am wonderfully ſtrong, and in good health, and am ſeldom troubled with any pain."

CASE X.

William Melmoth, Eſq. a gentleman now at an advanced period of life, was, many years ago, ſubject to violent pains in the back on much walking, which he attributed to weakneſs induced by profuſe diſcharges of blood by the bleeding piles; a complaint under which he had laboured ſeveral years. During the time of his being ſubject to the above-mentioned diſorder, he once or twice, after exerciſe on horſe-back, made ſome coffee-coloured urine.

About ſixteen years ago, he had an attack of a gravelly complaint accompanied with calculous diſcharges. This recurred at longer or ſhorter intervals, and attended with more or leſs pain, until a period of about 15 months preceding the preſent time, when he firſt had recourſe to the mephitic alkaline water. Of this he took about half a pint daily, of the ſtrength mentioned in the former part of this work, and perſevered in this courſe for about a month or ſix weeks. During this ſpace he always diſcharged with his urine pretty large and numerous particles of coagulated blood, but without any pain. This appearance cauſed him to ſuſpect that the medicine operated upon the urinary paſſages with too great violence. On this preſumption he gradually reduced the ſtrength of the ſolution, and at laſt found that three drachms of ſalt of tartar diſſolved in two quarts of water, was the proportion that agreed beſt with him. Specks of blood are ſcarcely now ever to be ſeen in his urine. Of the preparation above-mentioned he takes, and has for ſome months taken, about half a pint daily, and often a leſs

a leſs quantity. Mr. Melmoth's health is much better now than it had been for ſeveral years previous to his trial of the above-mentioned remedy, and his ſtrength much reſtored. He is alſo at preſent able to walk about the town without exciting any gravelly ſymptoms, which formerly were excited by very ſlight motion, inſomuch, that he could ſcarcely ſtir out of doors without uſing a ſedan chair, which is now no longer neceſſary on that account.

Mr. Melmoth has always taken, as well during the uſe of the mephitic alkaline water as before, a moderate proportion of vegetables, and ſuch other acid ſubſtances as are uſually eaten with animal food, and has uſed for drink at meals two or three glaſſes of wine, and now and then a little ale or porter. He has never found the mephitic alkaline water to diſagree with his ſtomach in any reſpect. In very cold weather he ſometimes puts into his cup a ſingle tea-ſpoonful of brandy.

December 14, 1788.

I this day received an account from Mr. Melmoth, in anſwer to an inquiry after his ſtate of health, in which he ſays, "that it continues in the ſame good ſtate it was when he gave the account inſerted in the former edition; that he has continued to uſe the mephitic water prepared in the ſame manner, and taken in the ſame ſmall quantities as before deſcribed; and that ſince he firſt had recourſe to it, he has never felt the ſlighteſt return of his complaint."

CASE XI.

Mr. Patrick Weſtoby of Gainſborough, in Lincolnſhire, a perſon now advanced in years, was, one day in the ſummer of 1776, ſeized with a ſudden ſtoppage of urine, whilſt he was paſſing his water freely. This continued a few minutes, and was not attended with much pain. To relieve this he took, as ſoon as it could be got, an infuſion of Burdock, with the addition of ſome milk, and a little honey,

ney, which paſſed off freely in the night following by urine, and brought with it a ſmall round calculus, flat on one ſide, and with a little riſing on the other, and about 1-5th of an inch diameter. He then continued free from any complaint of this kind about a year, after which interval he was again attacked with frequent urgings to make water, which he paſſed in ſmall quantities at a time, and with ſome, though but little pain. For theſe complaints he had recourſe again to the infuſion of Burdock root, but did not find the ſame eaſe from it as before. That year and the following he took a conſiderable quantity of Adams's ſolvent, but did not experience any relief from it. For the two or three years next ſucceeding, he uſually had, in each, two or three attacks, but they were moderate, and relieved by gentle diuretics with the addition of opiates. During the two years immediately preceding his laſt attack, his paroxyſms were leſs frequent, but more urgent, and attended with more bloody water, and more frequent excitings to paſs his water, and greater pain in the urinary paſſages, which continued

to be very troubleſome for ſome nights, but went off in the ſpace of two or three weeks. On the 3d of February 1785, when the froſt was very intenſe, he had a ſmart attack attended with many urgings to make water, which he did about thirty times in the courſe of the night, and paſſed his urine tinged with blood. In a few days however theſe ſymptoms abated, and his urine flowed freely and plentifully, and became of a good colour, and paſſed without pain. During the time he was in bed he was ſubject to a flow of pale clear water, which cauſed ſuch quick returns of inclination to paſs it, as interrupted his ſleep very much. The bark in infuſion, and opiates removed this ſymptom, and in about a month all his complaints ceaſed.

In the month of Auguſt following he had another attack, which continued about three weeks, and another towards the latter end of the month of October, which continued, with two intervals of 12 days each, to the 18th of January 1786. The weather was then very ſevere, and his diſorder never more troubleſome, his urine bloody,

with frequent urgings to paſs it, pain and irritation in the urinary paſſages, and no ſleep but with opiates. He began that day about noon to take the mephitic alkaline ſolution, and continued to take it regularly, according to the directions in the Appendix to Dr. Dobſon's work, for four or five days, but without any perceptible alteration in his ſymptoms, except that his urine became a little clearer. On Sunday, January 22, he paſſed the day and night in great pain; but on the Monday and Tueſday after, he obſerved a brown powder at the bottom of his chamber-pot, in quantity nearly ſufficient to cover a ſhilling, which he thought proceeded from the diſſolution of a calculus. He then became ſomewhat eaſier, but remarked, during two or three of the evenings preceding, that he felt ſome pain in the back, os pubis, and thighs a little below the hips, all of which were new ſymptoms. From Wedneſday morning his ſymptoms began to decline, his water paſſing freely, and being of a good colour, his irritations of the paſſages abating, and his urgings to paſs it returning leſs frequently. During this time he

obſerved in his urine what he took to be fragments of a calculus. Before he took the mephitic alkaline ſolution, he took a diuretic pill of oil of juniper, gum arabic, and uva urſi, during the uſe of which his urine was red, thick, and turbid, and depoſited a ſediment that adhered cloſely to the pot. His diſorder continued to abate until February 7, 1786, when he had another attack attended with pain, and ſome bloody urine which laſted a few days. His urine after this attack became again pale and clear; but nevertheleſs was voided in ſmall quantities, and attended with ſome pain. He then, by Mr. Colborne's advice, diminiſhed the quantity of the ſolution that he took daily, and added a few drops of laudanum to each doſe; which abated his ſenſations of irritation in the paſſages, and his urine ſoon became clear, and void of mucus or blood, was voided without pain, and eaſily retained. In June 1786, he was ſo far recovered as to be able to walk three miles a day without pain, feeling nothing more than a ſlight obtuſe ſenſation at the time his laſt drop of urine came away. His urine depoſited, on ſtanding, a conſider-

able

able quantity of a white adheſive ſediment, and ſometimes ſmall bits like broken ſhells. From this time to April 1787, he went on taking the mephitic alkaline ſolution in about two-thirds or one-half of the doſe directed in the Appendix, and has felt no return of his complaint, except once, which he aſcribed to the breaking of the machine, which prevented his taking his remedy for about ſeven weeks, after which he had a moderate fit, attended with frequent excitements to paſs urine, but not much pain. The mephitic alkaline water being again procured abated theſe ſymptoms, and carried them all off in about a fortnight. At preſent, April 4, 1787, he is free of all pain and irritation, or other ſymptoms of calculus.

CASE XII.

A ſervant of Charles Sheppard, Eſq. of Caſtle Godwin, near Painſwick, Glouceſterſhire, was, about the month of October 1785, taken with a ſuppreſſion of urine, and

and obliged to have recourſe to a catheter, in the paſſing of which, a ſtone was diſcovered in his bladder. This neceſſity recurred two or three times during the winter, and the poor man, in conſequence of this complaint, was rendered incapable of labour, and even unable to walk a very few yards without making bloody urine. He had alſo a conſtant diſcharge of mucus by the urinary paſſages. In May 1786, he began to take the mephitic alkaline water, and before he had taken it a fortnight, he found relief, and in about ſix weeks could walk, or ride on horſeback without any diſcharge of blood, and the mucous diſcharge was much leſſened. During the courſe of laſt winter he had one or two attacks, which were apprehended to proceed from his drinking cyder; his ſtate of health is now eaſy and comfortable; he has walked ten miles, and rode eighteen with much eaſe; can work whole days in the garden, but is cautious of any violent exertion, as he ſometimes feels the ſtone as a weight, and has frequent calls to make water, and ſometimes has a mucous ſediment

ment in his urine. *Taken from a letter of Charles Sheppard, Eſq. dated Caſtle Godwin, April* 11, 1787.

CASE XIII.

The Rev. Arthur Evans, about 50 years of age, and of a ſcorbutic habit of body, has been for ſome years afflicted with frequent nephritic complaints. In November 1785, he was ſeized in a moſt violent manner, with repeated vomitings and pains in the kidneys. In December following he came to Bath, and having the pleaſure of Mr. B. Colborne's acquaintance, he conſulted him, who kindly gave his advice, and recommended the immediate uſe of the mephitic alkaline water, adviſing three or four ſpoonfuls of boiling milk to be mixed in the water till the ſtone had paſſed; half a pint was drunk every day according to this direction. In a week from the firſt drinking, an oblong ſtone of the ſize of a ſmall kidney bean was paſſed with little pain; it was three weeks and five days from the firſt ſeizure to the paſſing of the ſtone.

ſtone. Mr. Evans perſevered in taking the ſame quantity of mephitic water daily (without milk) till June 1786, when he left Bath, and ſoon had the misfortune to break his machine, which deprived him of the mephitic water full three weeks; the conſequence was, that towards the latter end of Auguſt he had a return of his nephritic complaint, but no vomiting: in a few days afterwards he voided a few calculi; when theſe had paſſed, he ſoon became eaſy, and remained perfectly free from that complaint till February laſt, when he was ſuddenly ſeized with frequent vomitings and pains in the kidneys: theſe nephritic ſymptoms came on in the evening, and early in the ſubſequent morning a ſmall ſtone was paſſed, which Mr. Colborne, on examining, thought was rather a fragment of an old one than a new concretion; as Mr. Evans had not omitted drinking daily half a pint of mephitic water from Auguſt to February laſt, from which laſt period Mr. E. has had no complaint of a nephritic nature.—The foregoing account is given in Mr. Evans's own words.

Bath, April 23, 1787.

CASE

CASE XIV.

The following Caſe is that of M. S. Branthwayt, Eſq. of Taverham near Norwich, as related by himſelf.

" In June 1785, I was ſeized with a ſlight fit of the gout, and during the time the gout was upon me, I felt a violent pain quite round my body, but more particularly in my right kidney, attended with a frequent inclination to make water, which paſſed from me very ſlowly, and with much pain. At this time Mr. B. Colborne of Bath came to viſit me, and upon inſpecting my chamber-pot, found that my water was coffee-coloured, and from my deſcription of the ſymptoms I had felt, ſuggeſted to me that I had the ſtone. Fortunately Mr. Benj. Colborne had a ſmall travelling apparatus with him to make the Aqua Mephitica Alkalina: he made me ſome, and after I had taken 4 or 5 doſes, my urine paſſed more freely, and with leſs irritation, and became perfectly clear. When he

he left me, I was without the Aqua Mephitica Alkalina three weeks, in which time I voided a ſmall ſtone, and ſome red gravel, and my urine became turbid, and gave me infinite pain in paſſing. In the ſpace of two or three days after, I began again to take the Aqua Mephitica Alkalina; my water became clear, and paſſed without irritation, and I continued entirely free from all ſymptoms of the gravel, and was in better health than I had been for ſome time before. Indeed, feeling ſo perfectly well, I left off the water for 5 or 6 months, when I was again attacked with a violent pain in my right kidney, attended with fever and ſickneſs, which laſted two or three days; but not ſuſpecting it was the ſtone, and finding myſelf very well again, I did not take the Aqua Mephitica Alkalina till after I was a ſecond time attacked in the ſame way, but more violently. I then took the water again, and was perfectly well till September 1786, when I voided a ſtone about the ſize of a vetch, and ſince that time I have never left off the Aqua Mephitica Alkalina, nor have I had any

ſymptoms

ſymptoms of the gravel or pain in my kidney.

Taverham, near Norwich. M. S. BRANTHWAYT.

"Finding ſo much benefit from the Aqua Mephitica Alkalina, I recommended it to a poor woman in my pariſh (by name Kidd), who has been afflicted with the ſtone and gravel at different times between 20 and 30 years, during which time ſhe has voided many ſmall ſtones. This poor woman being always an invalid, paſſing by her door, I called to aſk her how ſhe did, and found her very ill with a nephritic complaint. I made her ſome mephitic alkaline water, and after taking a few doſes ſhe was much relieved, and continued mending for three weeks, when ſhe voided two ſtones, one near an inch long, the other about the ſize of a pea, weighing together 24 grains. She continued drinking the water ſome time after, during which time ſhe had no return of her gravelly complaints, and thought herſelf in better health than ſhe had been in for many years. I tried to perſuade her to continue the Aqua Mephitica

phitica Alkalina; but ſhe ſaid ſhe had no ſymptoms of gravel, and was very well, therefore I could not ſucceed.

M. S. B."

Extract of a Letter from M. S. Branthwayt, Eſq. *dated* December 14, 1788, *from* Taverham, *near* Norwich, *to* Benjamin Colborne, Eſq.

"*In anſwer to your letter reſpecting the mephitic water, I muſt inform you, that I have very conſtantly drank a large glaſs every morning, when at home, before breakfaſt. I have been perfectly well in health except gout, and have not had the leaſt return whatever of my gravelly complaints.*"

CASE XV.

Adrian Abbot, Cabinet-maker, being in London in the year 1775, and employed in his buſineſs, whilſt he was carrying a coffin, it being high above his head, it ſtruck

ſtruck againſt a building, and ſtrained him in the ſmall of his back. Three days after this accident he paſſed a conſiderable quantity of blood as he went to make water. From that time to the year 1783, he had frequent inclinations to paſs his water, and a conſtant pain in the ſmall of the back, and frequently a mucous diſcharge of a light yellowiſh colour, if he exerted his ſtrength to any conſiderable degree. Some time afterwards he was ſeized with a total ſtoppage of his urine, for which he was bled by the advice of a ſurgeon, and took medicines, and in about a week his urine paſſed eaſily. About ſix months afterwards he had another attack of the ſame kind, which, when it abated, was attended with a large diſcharge of blood, which became from that time a frequent ſymptom. At this time it was the opinion of two ſurgeons who attended him, that he had a ſtone in his bladder. He continued in this ſtate, with great pain in his back, and frequent inclinations to paſs his urine, until December 14, 1786, when being worſe, he applied to a ſurgeon, who directed him ſome medicines, but without ſucceſs. He

then applied to another gentleman of the profeſſion, who adviſed him to ſubmit to be cut. His urine at this time was foul and turbid, and changed the vegetable blues to a red colour.

On the 27th of January he was directed to Mr. Benjamin Colborne, who gave him ſome of the mephitic alkaline water, with directions how to take it. His urine ſoon became clear and tranſparent, and he could retain it a long time, and for many nights had occaſion to make water once only. The pain in his back ceaſed, and at preſent (April 20) he has no complaint of any kind.

This perſon is, ſince the publication of the above caſe, removed from Bath to Briſtol; but Mr. Colborne has very lately received information, that he is quite well, and has had no return of his complaint, but ſtill continues taking the mephitic alkaline water.

CASE

CASE XVI.

A tradeſman of this city of the name of Ralph *, had for many years been troubled with a ſtricture, occaſionally, of the urethra, which cauſed frequent obſtructions to the paſſage of his urine, for which he was obliged to uſe bougies, which gave him great pain without producing any permanent relief. During the ſpring of the year 1785, his complaints returned ſo frequently, and with ſuch violence, that it was not practicable to paſs a bougie. In this melancholy condition nothing but opiates afforded him any relief, which were obliged to be large in quantity, and frequently repeated. In the month of May in the ſame year, he had an abſceſs in perinæo formed, which diſcharged a large quantity of matter, and healed in about a month's time. His difficulty however of paſſing his water continued, and his urine was loaded with mucus. Nearly in this ſtate he continued until the eleventh of

* Miſpelt Roffe in the former Edition.

December 1786, when he began to take the mephitic alkaline water.

At that time his urine came from him drop by drop, and was ſo overcharged with mucus that it adhered to the pot in ſuch a manner, as not to fall out when the veſſel was turned with its mouth upwards. Its ſmell was alſo ſo rank and fœtid, as ſcarcely to be borne, and was ſo alkaline with the putrefaction, as to ferment with oil of vitriol, and to change paper ſtained with juice of turnſole to a blue colour. His pain was likewiſe ſo great as to oblige him to take opiate pills every three or four hours. He began the uſe of the mephitic alkaline water by taking it with milk as before directed, and with ſome drops of laudanum in each doſe. He took it every eight hours, and in the ſpace of twenty-four hours he paſſed his water much eaſier, and his irritations were leſs frequent and violent, and his urine came away in larger quantities at a time. By continuing his medicine he was able, in three or four days time, to take it without the laudanum, and to go about his buſineſs, which

is

is that of a ſhoe-maker, and to work at it much better than he had been able to do for ſeveral years. Since the above-mentioned time, he has had little or no return of his complaints, and is in every reſpect better in health than he has been for the laſt ſeven years. Before he took the alkaline mephitic water, he was not able, even when he thought himſelf tolerably well, to work at his buſineſs for two days together. Although this man has taken the alkaline mephitic water for four months, it ſeemed to have very little effect on a fragment of the ſame calculus, mentioned in the experiments before related to be made with urine. Yet it appeared to be of an alkaline nature by its changing paper ſtained with juice of turnſole to a blue colour.

Mr. Ralph continues perfectly well, but ſtill uſes the mephitic alkaline water, which is now become very agreeable to his palate. He grows fat under the uſe of it, and his complexion becomes florid.

CASE XVII.

——— Telling, a glazier of this city, had been for two or three years ſubject to ſtrictures of the urethra, which produced frequent ſuppreſſions of urine. About ten months ago from the preſent time, May 1, 1787, he was taken ill in the laſt-mentioned way, and continued without paſſing any water for two days, in which he ſuffered the moſt excruciating pain. A bougie was paſſed which produced a diſcharge of urine for the time. He had frequent returns of pain of this kind, but not ſo violent, and was never eaſy two days together. When he went to make water he had in general a teneſmus, and in the morning his urethra uſed to be greatly clogged by viſcid mucus, which delayed his urine paſſing, and frequently produced a temporary ſtoppage. His urine was foul in appearance, and of a wheyiſh colour, with gravel in it, and made in ſmall quantities.

After

After taking the alkaline mephitic water for three or four days, his urine began to paſs more freely and eaſily, and his complaints mended daily. He has now taken the mephitic alkaline water for two months, has no teneſmus on paſſing his water, can retain it well, and paſs it in large quantity, and the mucus is but little, and that of a thin conſiſtence compared to what he formerly voided. He eats, drinks, and ſleeps well, is able to labour in his buſineſs, and is upon the whole in better health than he has been for ſeveral years.

This perſon continues perfectly well, although he has left off taking the mephitic alkaline water.

CASE XVIII.

The Reverend Henry Wilſon, Vicar of Feverſham near Kendal in Weſtmoreland, aged 69 years, had been for ſome time afflicted, principally at intervals with a complaint of the urinary paſſages. This was much aggravated by wet or cold, and even by moderate exerciſe or motion. He could not walk a quarter of a mile without paſſing coffee-coloured water, and frequently little beſides blood. This was accompanied ſometimes with great pain, and always with much uneaſineſs. His water incruſted the chamber-pot, and depoſited beſides a quantity of looſe red ſand. Sometimes filaments reſembling bits of ſkin, might be ſeen floating in it. His appetite was but indifferent. In this ſtate he began on the 10th of May, 1788, to drink the mephitic alkaline water. Of this he took at firſt a pint and half daily, divided into three doſes; one of which he took an hour before breakfaſt, a ſecond at eleven o'clock in the forenoon, and a third at ſix in the evening. This he ſoon afterwards reduced

to

to a pint daily, taken in divided doſes at the periods above-mentioned. He took it at firſt with hot milk, as directed in this work; this he changed for raiſin wine, and this again for ginger wine, but again returned to milk. He purſued this courſe for three months, with ſome, though no great alleviation of his ſymptoms. His appetite was amended, and his urine left no cruſt on the chamber-pot. The above was the ſtate of this gentleman's health, as deſcribed by him in a letter I received from him in the beginning of September laſt. His laſt account, however, is much more ſatisfactory.

In a letter dated November 7th, 1788, he ſays, "Every diſagreeable circumſtance attendant on my complaint, has now left me. I find my appetite greatly improved, my health extremely good. I am as equal to any exerciſe of walking, &c. as I have been for ſeveral years, though entered upon my 70th year.

"Cold and wet were ever inimical to my diſorder; Sunday duty, therefore, or a funeral,

funeral, or being a few minutes in a ſhower, brought on my complaint, which continued troubleſome for three or four days before it left me; but I feel no inconvenience at preſent by being confined in my church for more than an hour and half at once; nor in being expoſed to a ſtorm of wind and rain for the ſame ſpace of time.

"I muſt own it requires a ſtrong reſolution, and no little faith in the efficacy of this medicine, to continue the uſe of it long together; and I drank it for more than three months, before I perceived any benefit from it; but it was extremely cold to my ſtomach moſt of this time, and diſagreeable; nor would I attempt to warm it with brandy, or any ſpirits, all the while. However, the Biſhop of Llandaff, and yourſelf, bad me perſevere. I did perſevere, and am at this time enjoying the fruits of this obedience; and I could not excuſe myſelf, did not I here offer you my ſincereſt thanks, for the bleſſing of the freedom from pain, &c. which I now enjoy."

Extract

Extract from a Letter, dated Dec. 24, 1788.

"I have for ſome time paſt been returning viſits on foot, at the diſtance of two or three miles, and twice or thrice a week. On Friday ſe'nnight I was celebrating the birth-day of a lady in this neighbourhood, from whence I returned about three o'clock in the morning of Saturday, without being in the leaſt diſordered with ſitting up, or my morning walk.

"I can with the greateſt truth and pleaſure aſſure you, that my health and appetite are both of them now, and have been for ſome months paſt, remarkably good; for which, under God, I think myſelf indebted to the mephitic alkaline water."

CASE XIX.

"The Reverend Robert Burton, of Oakingham in Berkſhire, aged 67 years, of a robuſt habit, and temperate in his way of

living, though ſubject to the gout, had been uſed to paſs red gravel in his urine, and ſometimes ſmall calculi, about the ſize of a large pin's head. About eight years ago, he had a violent attack of the bleeding piles, to which he had been before ſubject. About this time his water often came away reſembling coffee-grounds; and, if he took any exerciſe, appeared to be no other than pure blood, but without much pain. Theſe bleedings, however, were moderated by a courſe of the bark. He had in the beginning of Auguſt (1788) a fit of the gout, which he had not had to any great degree for ten years before.

"After this, his pains in making water were very great; the calls frequent, and the quantity ſmall, attended with ſhiverings, and an exceedingly troubleſome irritation backwards, except when he was lying down in bed. At this time he was ſuppoſed to have a ſtone in his bladder, and was ſounded, but no calculus was diſcovered. He paſſed every morning a large quantity of viſcid mucus of a dark colour, and ſometimes mixed with a little grumous

mous blood, but not more fœtid than common urine. The acid and alkaline draughts (as recommended by Dr. Hulme) were then tried; but as no effect was obſerved from their uſe in the ſpace of three weeks, they were laid aſide, and lime water made from oyſter ſhells ſubſtituted in their room. The patient, however, growing worſe, the lime water was left off, and an infuſion of the red bark adviſed and perſiſted in until a ſevere flux obliged him to lay aſide all medicines except aſtringents and opiates. When this ceaſed, he returned again to the bark, which he took thrice a day, with five drops of laudanum in the laſt doſe. He had, at this time, a continual thirſt, though no fever, and almoſt every other ſymptom incident to ſuch complaints to a very diſtreſſing degree."

The above ſtate of the caſe was ſent to me, dated September 23, 1788, deſiring my opinion. I adviſed a continuation of the uſe of the bark in ſmaller quantity, and to try the alkaline water with hot milk, as directed above, to the quantity of half a pint daily, taken at two doſes, and with a few

few drops of laudanum, and a little manna to be occaſionally taken if coſtive.

In a Letter, dated the 22d of November (1788), I received an account of the effects of the remedy as follows:

"Of three dozen of Killick's half pints, I have taken twenty-one in hot milk, with laudanum, as well as the red bark, as directed; only the laſt proving too aſtringent, and the means to counteract it throwing me into the contrary extreme, I left it off. Whilſt coſtive, I had ſeveral bloody ſtools, though no bloody urine as uſual with me in that ſtate; and to be lax, is always diſtreſſing, and heightens my ſufferings, ſo I now take the medicated water only.

"As to my preſent ſtate, my appetite is good, and my ſleep comfortable, and as ſound as may be with ſo many interruptions from urinary calls, which, though much leſs frequent than they were a fortnight ago, are frequent enough to require the urinal in bed; the uſe of which obliges me

me to lie nearly on my back. In this poſture, my water paſſes ſo eaſily, that, on waking, I often find the veſſel quite full. At other times, the paſſage of my urine requires efforts, but now ſeldom occaſions any troubleſome irritations backwards. For about a week paſt I have moderately ſucceeded in keeping my body regular; my urinary calls have not been near ſo frequent as formerly; and there has been ſome diminution in the quantity of mucus, though enough of it yet paſſes every night to ſhew that the cauſe of the complaint ſtill exiſts. Whatever this is, it ſeems to be ſeated about the neck of my bladder; for there the feeling is at one time like what one would expect from a ſore expoſed to the paſſing urine; and at another, a kind of itching like that of a healing wound. I have watched attentively to find ſome fragments or gravel, but in vain. My general health is far better than it was three weeks ago, though the gout or rheumatiſm, for it is not yet ſwelled, has fallen upon my knee. Such is my preſent ſtate."

I have

I have ſince received another Letter from Mr. Burton, dated December 15, 1788, in which he ſays, that about a fortnight after he wrote the letter of November 22d, he paſſed a thin gritty ſubſtance of the ſize of a ſilver penny, which he thinks to be a fragment of a calculus. At preſent (December 15, 1788), he ſays, that his urine is very clear, and that he retains it ſufficiently to make the intervals between his calls about an hour and three quarters in length: his ſleep is comfortable; his appetite and digeſtion good; and his health in general (as he thinks) in a fair way of being re-eſtabliſhed; and himſelf reſtored, as he expreſſes himſelf, to a capacity of enjoying a good ſhare of the comforts of life.

CASE XX.

James Clayton, Eſq. of Cavendiſh Square, London, was firſt attacked with the gravel about the latter end of the year 1785, and had fits of it once or twice a week, attended with great and frequent irritations of the urinary paſſages, and often

brought away ſmall ſtones about the ſize of pins heads, and ſome much larger, of different ſhapes and colours; ſome of them being yellowiſh, and others white, all which were attended with great pain when they came away. He tried many medicines for the above complaint, but without much effect. He drank marſh-mallow tea with the ſeeds of the wild carrot, and barley water with gum arabic, but without benefit.

On the 30th of July, in the year 1787, he began to drink the mephitic alkaline water of which he took ſeven ounces daily. In the firſt three months after he began to take it, he had but ſix or ſeven attacks, which was not above half the number he had before in the ſame ſpace of time. About the middle of October 1787, he had ſeveral attacks in the ſpace of two days; and in one of theſe, which was very ſevere, he voided five or ſix calculi at once; and in the ſpace of ſix hours, ſeven or eight more; ſome of them as large as, and reſembling in ſhape, half cherry ſtones, and others rough and triangular, but moſt of them concave and convex, as if they came from

a ſtone as large as a ſmall walnut. During his pain, he was frequently obliged to have recourſe to emollient clyſters, and ſometimes to laudanum, which he took from 30 to 60 drops when in extreme pain; but was deſirous to avoid it, as it injured his appetite, which, if the laudanum was not taken, appeared to be amended by the mephitic alkaline water, which agreed alſo well with his health in every reſpect. In the beginning of November 1787, he diſcharged ſeven more calculi, larger than any he had brought away before, and of a whitiſh colour, and convex and concave in their ſhape, and as large as cherry ſtones. Theſe, as might be expected, produced great torture in their paſſage, and great ſoreneſs of the parts for ſome time after, and a ſenſation of weight at the neck of the bladder. One day towards the middle of the month (November 1787), he was ſeized with great pain, in the right kidney; and in an hour or two found a calculus coming forwards, which about three in the morning came away, and proved to be the largeſt he had ever paſſed. In half an hours time after the firſt came away, he paſſed ſeven

others

others of a ſmaller ſize. Theſe were followed with ſuch pain in making water as was even greater than when the ſtones were paſſing. His urine was cloudy, and mucous, and depoſited a red ſediment on the pots; about this time he was accuſtomed to uſe occaſionally a warm bath, and a fomentation of camomile flowers in a flannel bag, which gave temporary eaſe. Before he took the mephitic alkaline water, the ſtones he paſſed, were yellowiſh and hard; but ſince he drank it, they have become ſmaller in ſize, white, and crumble on preſſure between the fingers. In January 1788, he paſſed two ſmooth ſtones, one as large as a vetch, and the other the ſize of a barley corn, without much pain. Since January 8th, 1788, to this preſent time (December 2d, 1788), he has not had above twice a little irritation in paſſing his water, which did not laſt an hour each time; and ſince February laſt, has been perfectly well. He is now able to travel in his chariot for twenty miles together without pain, and to walk a mile and half, whereas, before he took the mephitic alkaline water, he could not walk acroſs the

room. He has taken the quantity of half a pint daily, with about half a tea-cup of warm milk in each half pint of the water, ſince January laſt (1788).

The above account is literally true.

Cavendiſh-Square,
Dec. 2, 1788. JAMES CLAYTON.

CASE XXI.

Copy of a Letter from Lieutenant Colonel Williamſon of the Royal Regiment of Artillery, to a friend on the ſubject of the Stone and Gravel, with which he was afflicted, and the ſurpriſing benefits derived from the uſe of the Aqua Mephitica Alkalina.

Shooter's Hill, Oct. 15, 1788.

Dear Sir,

" It is with great readineſs that I ſit down to give you an account of my complaint (the ſtone and gravel), as alſo the important ſervices which I have received from the uſe of the Aqua Mephitica Alkalina.

In

In the latter end of the year 1781, when at Barbadoes, I was ſeized with a violent ſtrangury, and pain in my kidneys, which confined me to my bed near a week; fomentations, and warm bathing, afforded me temporary relief; but from that period I was ſcarcely a fortnight together free from pain. In July, 1782, I had another moſt violent attack, attended with an acute pain in my kidneys, a numbneſs in my thighs, with great ſickneſs at my ſtomach, and an head-ach; here my former treatment failed, and the medical gentlemen adviſed me to embark for England, which I did; my diſorder continued with little intermiſſion from pain to the 24th of September, when on my paſſage home, and after ſix days torture, there came from me a ſtone about the ſize and ſhape of a lemon ſeed: from this time until July 1787, I was never ten weeks free from pain, and paſſed above one hundred and fifty ſtones (excluſive of ſmall gravel); ſome larger than the firſt which I paſſed, and few ſmaller than an hemp-ſeed. I had the beſt medical advice whilſt in England, and adhered ſtrictly to their directions for ſome years; ſoap-

lees, four and five pounds of honey in a week, wild carrot, and flax-ſeed tea, and numberleſs other experiments I tried, but without relief; bloody urine, loſs of appetite, and continual pain, had ſo much debilitated me, that I could ſcarcely walk, ſtand or ride; and I almoſt began to deſpair ever of meeting with any thing that could give me eaſe, or remove my complaint; but early in June 1787, fortunately for me, a gentleman who reſides moſtly at Bath, did me the honour of a viſit, and ſtrongly recommended Mr. Colborne's alkaline ſolution, impregnated with Fixed Air, from which I have derived the happieſt effects: it is now more than ſixteen months ſince I have adopted the above preparation, during which time I have been totally free from my diſorder; my appetite is returned; I can take any exerciſe as uſual, and I indulge myſelf in ſeveral favourite things in eating and drinking, from which I was before debarred, by advice of phyſicians. I allow the ſolution to be expoſed to the Fixed Air for ſixty hours, inſtead of forty-eight, (as mentioned in the printed inſtructions delivered at Parker's glaſs

ſhop,

ſhop, in Fleet-ſtreet,) which agrees better with my ſtomach; and I reſtrict myſelf to half a pint of the water on riſing in the morning, and the ſame quantity on going to bed. I hope that the above ſtatement of the effects of the alkaline ſolution, impregnated with Fixed Air, upon my diſorder, may induce your friend to make an experiment of it; and that he may receive the ſame benefit with myſelf from it, is the ſincere wiſh of,

Dear Sir,

Your moſt faithful,

humble Servant,

JOHN WILLIAMSON.

CASE XXII.

Communicated by Mr. Perry.

A lady of this city, who wiſhed her name might not be mentioned, aged fifty, of a thin habit of body for many months, has been afflicted with great nauſea, loſs of appetite, violent pains about the region of the kidneys, frequent and forcing pains to make water, which comes away in very

ſmall quantities at a time, and on ſettling a few minutes, depoſits a viſcid mucus, and ſand. A great variety of mucilaginous and oily medicines have been taken to no effect. On being informed of her ſymptoms, I recommended two ounces only of the alkaline ſolution, impregnated with Fixed Air, to be taken three times a day. It agreed perfectly well with her ſtomach: in the courſe of a week ſhe found herſelf ſenſibly better in her general health; the urine became clear, and the remaining nephritic ſymptoms left her. The lady has continued the ſolution one month, and is exceedingly well without taking any other medicine.

CASE XXIII.

Communicated by Mr. Perry.

Thomas Shell of this town, aged 13 years in September 1787, applied to me at the requeſt of Mr. Colborne, to be ſounded for the ſtone. He had great pain and difficulty in making water, which came away by

by drops. He alſo complained of a bearing weight at his fundament, where nothing uncommon was to be perceived. From his ſymptoms, I ſounded him, and found a ſtone in his bladder. I deſired him to inform Mr. Colborne of the circumſtance, which he did, as I was informed, by the gentleman, who humanely and generouſly took him under his care, and adminiſtered the ſolution with more than uſual good effect. I believe the medicine was uſed for twelve months, at times. Within theſe ten days the lad called on me, with the greateſt pleaſure, to ſound him again, which I did repeatedly, and could not perceive any ſtone, or did he complain of the leaſt ſymptom of it, December 4, 1788.

He took the water two months before he found any benefit.

CASE

CASE XXIV.

John Fuſſell of Bath, about 13 years old, who had been cut for the ſtone in Briſtol Infirmary, ſix years before, could never retain his urine in the day time, from the time of his being cut? He began taking the mephitic alkaline water November the 29th, 1787, and drank in two days a quart bottle of it, with 30 drops of laudanum, and ſome hot milk. This was continued for about a month, and then the laudanum and milk was omitted. He had not taken the water above a month or ſix weeks, before he retained his urine perfectly well, which he continued to do, whilſt he took the water; but on leaving off the uſe of the water for a few days, his diſorder returned, and continued as before mentioned, for a month, till he began again taking the water, which had the ſame good effect as it had before for three or four months. But by leaving off the uſe of the water a ſecond time, his diſorder returned as before. About the beginning of October 1788, he began again on the water, and in five or ſix days time, he could retain his urine again, and did

did ſo till December 2, 1788; and then by his own neglect in not continuing to take the water, though but for four or five days, his diſorder returned a third time; but now he promiſes not to omit it for the future, and is likely to do well.

Several other accounts of the good effects of the above remedy have been received, but as the perſons who were benefited would not permit their names to be mentioned, they are not here put down.

It was my intention to mention none, but ſuch as would permit their names to be vouched for the truth of the narrative of the relief gained, and this is only departed from in two inſtances, (Caſe IV. Caſe XXII.) which would not have been inſerted, had not, in the former, the perſon and his ſituation been well known to numerous inhabitants of this place, and the latter vouched by a very reſpectable ſurgeon of this city.

I would farther mention, that I have been informed from the moſt unqueſtion-

able authority, that the mephitic alkaline water has been of the greateſt ſervice in a caſe of violent ſtrangury, without any ſuſpicion of calculus, which returned about every ten or fourteen days. It prolonged the intervals to ſeveral months, abated the violence of the pain, and diminiſhed the heat of the urine.

Leſt it ſhould be alleged that the Caſes above recited, however truly and candidly deſcribed, may, notwithſtanding, be a ſelection only from a number of others, in which this preparation may have been found unſerviceable or hurtful, I think it neceſſary to aſſure the publick, that no Caſe has fallen under my perſonal obſervation wherein the Mephitic Alkaline Water has appeared to be in the ſmalleſt degree prejudicial; nor have I ever heard that it proved ſo from the report of others. One caſe only has occurred to me wherein it was of no ſervice; and in this the principal ſymptom was a frequent and painful urging to paſs the urine, which came away in ſmall quantities, but with little alteration in colour, ſave that a few ſpecks of blood were

were ſometimes viſible, but no gravel or mucus. As this ſeemed to be owing to the acrimony of the urine, the mephitic alkaline water was adviſed, but it was not ſucceſsful, though it no ways aggravated the complaint.

EXPERI-

EXPERIMENTS.

On the ſolvent Effects of the Alkaline Solution ſaturated with Fixible Air.

By BENJAMIN COLBORNE, Eſq.

A FRAGMENT of a calculus of an ochrous colour, and rough on the outſide like a mulberry, weighing fifty-one grains, was put into about two ounces and a half of the mephitic alkaline ſolution, and corked up. After two days ſtanding, the ſolution was poured off, and a freſh portion put on, and this was repeated every day, or every other day, for thirty-one days ſucceſſively.

At the end of that time the ſtone was again weighed, and found to have loſt thirty-ſix grains of its original weight.

Another fragment of the ſame calculus, weighing 41 grains, treated in the ſame manner, loſt in thirty-ſeven days thirty-two grains.

Another

Another fragment of the ſame, weighing fifty-four grains, treated as above mentioned, loſt in thirteen days thirty-two grains.

Another fragment of a calculus, of a light ochrous colour, and cloſe texture, weighing forty-one grains, loſt by the ſame treatment in thirty-three days, eleven grains only.

A ſmooth white calculus was ſawn into two pieces, one of which weighing 29 grains, was put into the alkaline ſolution, but imperfectly ſaturated with Fixible Air; the other weighing twenty grains, was put into an equal quantity of the ſolution perfectly ſaturated; after ſtanding twenty-eight days, the firſt had loſt ſix grains, the other eight grains.

A human calculus was divided into four parts, the firſt, No. I. weighing twenty grains, was put into the ſaturated alkaline ſolution, made of the common ſalt of tartar of the ſhops; the ſecond, No. II. weighing nineteen grains, was put into a ſimilar ſolution

lution made with a proportionable quantity of the oleum tartari per deliquium; the third, No. III. weighing 18 grains, was put into an alkaline ſolution made with ſalt of tartar procured from Apothecaries Hall; and the fourth, No. IV. weighing 18 grains, into an alkaline ſolution made with the cauſtic lixivium, neutralized by means of Fixible Air, and as nearly as poſſible of the ſame ſtrength with the others. After ſtanding 45 days, No. I. had loſt 13 grains; No. II. 13 grains; No. III. 14 grains, and No. IV. 11 grains. *

A piece of calculus, weighing 51 grains, put into the neutralized alkaline ſolution, made with lixiv. tartari, loſt in 18 days 29 grains.

Another piece, weighing 56 grains, put into an alkaline ſolution made with foſſil alkali in the ſame proportion, and neutralized in like manner, loſt in 18 days 13 grains.

Another piece, weighing 55 grains, put into

* *N. B.* Theſe different alkalies were tried to diſcover, if one alkali had a greater power than another.

into a neutralized ſolution made with ſalt of tartar, loſt in 18 days 11 grains.

Another piece of calculus, weighing 41 grains, put into a neutralized alkaline ſolution, loſt in 31 days 30 grains.

Another piece, weighing 49 grains, put into a neutralized ſolution made with ſalt of tartar, loſt only four grains in the ſame time.

A piece of calculus, weighing 56 grains, was put into a neutralized ſolution made with foſſil alkali, in 31 days it loſt 18 gain s.

Another piece that weighed 64 grains, put into a ſolution of only half the ſtrength, made with lixiv. tartari, loſt in 31 days 42 grains.

The calculi above-mentioned were corroded in holes like a worm-eaten piece of wood, but externally preſerved their original figure, till they all at laſt fell to pieces.

ADDITIONAL EXPERIMENTS.

By the Same.

Experiment I.

October 16, 1786. A fragment of a hard, close-grained human calculus, weighing fifty-five grains, was put into a large wide-mouthed vial, and upon it was poured *daily* the first urine that was passed, after taking a dose of the mephitic alkaline water, by a person that was in a course of taking it every day. The vial was set in a moderately cool place, and the urine regularly changed.

	Loss of Weight.	Weight of the Remainder.
From the 16th of October to Nov. 16, it lost - -	2 gr.	53 gr.
From Nov. 16, to Dec. 16	7 gr.	46 gr.
From Dec. 16, (1786) to Jan. 16, (1787) - - -	10 gr.	36 gr.
From Jan. 16, to Feb. 16. -	10 gr.	26 gr.
From Feb. 16, to March 16 -	4 gr.	22 gr.
From March 16, to April 16 -	4 gr.	18 gr.

Experiment II.

Another fragment of the ſame calculus was put into a wide-mouthed vial, and upon it was poured every day the urine of a healthy perſon who never had any ſigns of gravel, and who was not in the habit of taking any medicine whatever. The calculus weighed when the urine was firſt put upon it 45 grains.

	Loſs of Weight.	Weight of the Remainder.
From October 16, 1786, to Nov. 16 - - -	0	45 gr.
From November 16, to December 16 - - -	0	55 gr.

About the latter end of December, the urine was neglected to be changed, and the ſame urine remained upon the calculus until January 26th, in which time the fluid had become more fœtid, and alkaline. The calculus had, during this time, fallen into three pieces, and had loſt in weight ten grains. From that time the urine was changed regularly every day. On the twenty-ſixth of January, the fragments of the above calculus weighed 35 grains.

	Loſs of Weight.	Weight of the Remainder.
From January 26, to Feb. 26 - - -	0	35 gr.
From February 26, to March 26 - - -	Gain of Weight gr. 1ſs.	36½ gr.
From March 26, to April 26 - - -	2½ gr.	37½ gr.

EXPERIMENT III.

January 24th, 1787, an entire calculus of a white colour, and ſixty grains in weight was put into a wide-mouthed vial, and on it was poured every day ſome of the urine of a perſon who was in the habit of taking the mephitic alkaline water in the ſame manner as is mentioned in Experiment I. and the urine renewed daily. In the ſpace of two months, the calculus was diminiſhed in weight eight grains, and in another month the whole diminution was twenty-five grains. The laminæ that form the calculus alſo began to ſeparate, and it appeared, that the action of the ſolvent had penetrated much deeper in one part than another.

EXPE-

Experiment IV.

A fragment of another very hard red calculus, which weighed fifty-four grains, was treated in the ſame manner, and for the ſame time as in the laſt experiment. It loſt in that ſpace of time ſeventeen grains.

Obſervations on the Symptoms attending Perſons afflicted with Calculus, and on the Effects of the Mephitic Alkaline Water.

By the ſame.

Urine in general will change paper ſtained with juice of turnſole to a red colour, which will be permanent; but the urine which is firſt made after taking the mephitic alkaline water, will change the turnſole paper to a blue colour. This will take place even if the mephitic alkaline water be taken not more than a quarter of an hour before the diſcharge of the urine.

If the mephitic alkaline water be ſatu-

rated with fixible air, it will not produce any immediate change on the turnſole paper, but after a ſhort expoſure to the air, the paper will become blue, as the ſuperabundant quantity of fixible air flies off.

The urine of almoſt every perſon in health, if ſuffered to remain for twenty-four hours in the chamber-pot, forms more or leſs incruſtation on the bottom and ſides. This, however, I believe never takes place in the urine of thoſe who are in the habit of taking daily a competent doſe of the mephitic alkaline water.

Perſons ſubject to the ſtone or gravel, ought accurately to obſerve the ſtate of their chamber-pot, whether it keeps free of fur, or other adheſion to its bottom and ſides; this being the principal criterion, by which the increaſe or amendment of the complaint can be aſcertained.

If no diſcolouration of the veſſel appears after the urine has ſtood in it for ſome time, and particularly if the urine clears away

away any former adheſion, we may reſt aſſured the urine is of a proper kind; but if the ſides of the veſſel grow foul, and this foulneſs accumulates, it indicates a ſtate of the urine that tends to produce or increaſe calculus.

Six or eight ounces by meaſure of the mephitic alkaline water taken daily, will be found ſufficient to keep the urine in a proper ſtate by the generality of people; others may require double that quantity.

The effect of the mephitic alkaline water in diſſolving the incruſtations formed by the urine, affords a ſtrong preſumption in favour of its diſſolving power on the calculus, therefore whoever voids any calculous fragments during the time of drinking the mephitic alkaline water, has great reaſon to think that they are parts of an old concretion mouldering away, provided however a ſufficient quantity of the remedy be taken to prevent any fur concreting on the chamber-pot.

As the alkaline mephitic water is ſo

efficacious in obviating the acrimony of the urine, it ſeems likely to be of ſervice if given immediately after the operation of lithotomy has been performed, as it is well known that the healing of the wound is often much retarded by the irritation of that diſcharge, which is more likely to be troubleſome in this way, as it is in its own nature more acrimonious.

Schirroſities of the os uteri and of the proſtate glands, by retarding the paſſage of the urine, often produce ſymptoms ſimilar to thoſe that ariſe from calculus. One difference however may be remarked, which is, that people who have ſuch ſchirri, bear the motion of a carriage or of a horſe better than is done by thoſe who have calculus; and if they void mucus, it generally comes away with the laſt drops of their urine, and the pain they feel laſts in much the ſame degree, during the whole of the time the urine is paſſing, which is ſeldom the caſe in calculous complaints; as the pain in them is generally moſt acute, juſt as the laſt drops are diſcharging.

People

People who have ulcers in the urethra attended with ſtricture, generally void purulent matter previous to the coming away of the urine, which laſt, by being long retained, ſometimes cauſes abſceſſes in the perinæum and ſuppreſſions of urine.

I have known perſons, of both ſexes, advanced in life, complain for many years, of frequent urgings to make water, which comes away by little at a time, and is generally of a wheyiſh appearance, and after ſtanding twenty-four hours, depoſits a large mucous ſediment. Sometimes a ſuppreſſion takes place. All the caſes of this kind in which the mephitic alkaline water was tried, found more or leſs relief, one only excepted, which on examination proved to be a ſchirrus of the os uteri.

In violent paroxyſms of the ſtone or ſtrangury, I have adviſed the uſe of opiates combined with the mephitic alkaline water. Fifteen or twenty drops of the thebaic tincture may be taken in a quarter of a pint of the water, and occaſionally repeated. A bag of oats heated in boiling water,

I have experienced to be a convenient and ſafe method of applying a fomentation to the os pubis, and what generally gives eaſe. A clyſter alſo of two ounces of olive oil, and forty drops of the thebaic tincture, may be injected and retained for ſeveral hours. If nevertheleſs the mephitic alkaline water ſhould prove too ſtimulant to be repeated during the fit, which ſeldom happens, barley-water, with gum arabic, may be ſubſtituted in its place; and when the pain has ſubſided, recourſe may again be had to the mephitic alkaline water.

The following experiments were made by myſelf on the ſame ſubject.

Two calculi of a ſimilar appearance, of a whitiſh colour with a pink tinge, and of ſuch a conſiſtence as to be eaſily ſcratched with the point of a knife, the one weighing five grains, and the other two grains and a half, were put into ſix ounces of the alkaline ſolution, as above; in 38 days, during which time the ſolution was changed ſix times, they were diminiſhed in weight five grains

grains and a half, but the apparent ſize was little leſs than at firſt; they were however ſo friable as to fall to pieces on ſlight touching.

Two other ſmall calculi ſimilar in appearance to the others, and both weighing ſix grains and a half, were treated in the ſame manner. In 38 days they were both of a ſcaly appearance on the outſide, and of a hollow worm-eaten texture within, and withal ſo ſhivery, as to fall to pieces on ſlight preſſure. The pink tinge on the outſide was much diminiſhed, but was retained within. The weight was only gr. 1 ſs. ſo that they had loſt 5 grains.

Six ſmall calculi ſimilar to the foregoing, and weighing gr. iv. ſs. were treated as above. In 38 days they had loſt three grains and three-fourths, and were ſo fragile as to fall to powder on being touched.

COM-

COMPARATIVE TABLE

Of the ſolvent Powers of the Alk. Solution, ſaturated with Fixed Air, with Water ſimply impregnated with Fixed Air.

Mr. Colborne's Experiments with the Meph. Alk. Water.

Original weight of the calculi.	Time they continued immerſed	Weight loſt by the calculi.
51 grains.	31 days	36 grains.
41	37	32
54	13	32
41	33	11
20	28	11
51	18	29
55	18	11
41	31	30
49	31	4
64	31	42

Mr. Colborne's Experiments with the Urine of a Perſon who was taking the Mephitic Alkaline Water.

Original weight of the calculi.	Time they continued immerſed	Weight loſt by the calculi.
55 grains.	182 days.	37 grains.
60	90	25
54	90	17

EXPE-

EXPERIMENTS I made myſelf with the Mephitic Alkaline Water.

Original weight of the calculi.	Time they continued immerſed	Weight loſt by the calculi.
7½ grains.	42 days.	5½ grains.
6½	48	5
4½	48	3½

EXPERIMENTS made by Dr. Percival on the diſſolvent power of Water, ſimply impregnated with Fixible Air, on human Calculi.

See Percival's works, Vol. III.

Original weight of the calculi.	Time they continued immerſed	Weight loſt by the calculi.
152 grains.	2 Days.	2½ grains.
165½	2	11
126½	2	gr. ½
68½	2	3½

EXPE-

EXPERIMENTS I myſelf made on the ſolvent power of Water, ſimply impregnated with Fixible Air, upon human Calculi.

See Experiments and Obſervations on Fixible Air, London, printed 1776.

Original weight of the calculi.	Time they continued immerſed.	Weight loſt by the calculi.
6 grains.	15 days.	4½ grains.
7	31	4
4⅛	31	2½
5	31	2½

EXPERIMENTS

On the antiſeptic Qualities of the Alkaline Solution ſaturated with Fixible Air.

Three pieces of lean mutton, a drachm each in weight, were, on Dec. 21, 1784, ſeverally put into eight ounces of ſpring water, into the ſame quantity of water ſaturated with Fixible Air, and into the ſame quantity of the alkaline ſolution, and all cloſely corked up, and placed in a cloſet in a room wherein a conſtant fire

was kept. The weather being very cold no change was perceived for ſeveral days.

On Dec. 29, the vial with the ſimple water began to look cloudy, but ſcarcely any ſmell was perceivable.

The others continued clear and ſweet.

On Jan. 2d, 1785, the ſmell was more perceivable, but ſtill faint, in the vial with ſimple water; ſome little of a muſty ſmell was perceivable in the vial with water ſaturated with Fixible Air; but the mephitic alkaline ſolution ſtill continued free of ſmell, and the fluid clear.

Jan. 3d. The vial with the ſimple water had acquired a ſmell evidently putrid. That with the water ſimply with Fixible Air had the muſty ſmell much increaſed. That with the mephitic alkaline ſolution was perfectly ſweet.

EXPE-

EXPERIMENTS

To determine the comparative Quantity of Fixible Air contained in Salt of Tartar, and in a proportionable Quantity of the Mephitic Alkaline Water.

Experiment I.

Two ounces, by meaſure, of the mephitic alkaline water, were put into a vial about three ounces contents, and exactly counterpoiſed in a nice balance. This with the correſponding weight being ſet aſide, I mixed forty drops of oil of vitriol with one ounce, by meaſure, of water, and counterpoiſed that alſo, together with the vial that contained it. I then added the acid fluid to the alkaline, drop by drop, until all effervescence ceaſed, after which I again weighed both the vials with their reſpective contents.

The acid liquor had loſt one hundred and ſixty-ſeven grains, and the alkaline had gained only one hundred and fifty-eight;

ſo

ſo that nine grains of air were diſſipated. Hence it appears, that fifteen grains of Salt of Tartar in ſolution, was capable of containing nine grains of Fixible Air, which, if we ſuppoſe Fixible Air to be in weight to common air as three are to two, amount to about thirteen ounce meaſures.

EXPERIMENT II.

Twenty grains of dry Salt of Tartar were put into a vial, and accurately counterpoiſed, as was another vial containing diluted vitriolic acid; I dropped the acid upon the alkali until all effervescence ceaſed. On weighing each of them again, the acid was found to have loſt fifty-three grains, and the alkali to have gained forty-ſeven and a half—difference five grains and a half. The dry ſalt of tartar therefore appears not to be half ſaturated with Fixible Air, being in this reſpect to that contained in the mephitic alkaline water, as eleven to twenty-four.

According to Dr. Dobſon's Experiments

on this * ſubject, the ſalt of tartar he uſed contained a ſmaller proportion of fixible air than that here employed, two drachms being computed by him to contain only twenty-eight grains of Fixible Air, whereas in the above experiments, that quantity is reckoned to contain thirty-three grains.

* See his Medical Commentary.

RE-

REMARKS UPON,

AND

INFERENCES FROM,

THE FOREGOING

CASES AND EXPERIMENTS.

THE Caſes above related, which are all deſcribed either by the parties themſelves, or by profeſſional perſons who attended them, whoſe veracity is unqueſtionable, will no doubt have their due weight with the reader.

Caſe I. exhibits an inſtance of a compleat cure of a perſon conſiderably paſt the meridian of life, who had been eighteen years afflicted in the moſt grievous manner with this complaint; and who had tried almoſt all the boaſted remedies, without their

affording any abatement of his ſufferings, and with manifeſt injury to his general health. In this inſtance, the mephitic alkaline water ſeems not only to have proved a ſpecific remedy for the calculous complaint, but alſo to have repaired to a degree ſuperior to what could have been expected, the injuries done to the conſtitution, both by the fatigue and diſtreſs incident to the diſorder; and by the violent remedies which were uſed previous to his being acquainted with the efficacy of the mephitic alkaline water. Time, the only teſt of truth in ſuch inſtances, ſeems to have aſcertained the fact of his recovery beyond any poſſibility of doubt. Nearly eleven years have now elapſed ſince he began to make trial of this remedy; and during that time he has had no other interruption of eaſe than what might, as clearly as we can trace any occurrence in medicinal practice, be aſcribed to the omiſſion of the remedy, before the tendency of the ſyſtem to generate calculus was ſubdued. That time, however, appears to be now in a good meaſure arrived, as he is at preſent able to intermit the uſe of the mephitic

phitic alkaline water, without hazarding any of the painful ſymptoms which before occurred, when it was omitted. It is not, however, clear that he would be able to forbear its uſe altogether; nor does this gentleman, I believe, mean to try ſuch an experiment, which would be dangerous only, without utility.

The obvious effects of the water upon the general health, are in this caſe worthy notice. Mr. Colborne's appetite, ſtrength, complexion, and ſpirits, all indicate as good and confirmed a ſtate of health, as is poſſeſſed by perſons of the beſt conſtitution at his time of life; and the returns of the gout to which he is conſtitutionally ſubject, ſeem to have been rendered milder, and to have gone off more favourably, whilſt he was under a courſe of the mephitic alkaline water, than at other times; and never to have produced, as they frequently do, any aggravation of the calculous complaint.

Caſe II. not only confirms the efficacy of the Aqua Mephitica Alkalina, in relieving

ing the painful ſymptoms, but affords the higheſt preſumption, that it poſſeſſes very powerfully ſolvent qualities. Mrs. Southcote had diſcharged numerous calculi, and ſeveral of a ſize ſufficient to give exquiſite pain in their paſſage; and had the greateſt reaſon, from her own ſenſations, to think that one remained behind too large to paſs. Yet on a careful examination of her body after her deceaſe, which laſt was occaſioned by a diſorder quite unconnected with calculus, no calculus was diſcovered either in the kidneys or the bladder; both which were found likewiſe to be in every other reſpect in a perfectly ſound ſtate; a circumſtance ſcarcely to have been expected, even ſuppoſing no calculus to have been preſent, if we reflect on the dreadful ſufferings ſhe had formerly undergone from the diſeaſed ſtate of thoſe organs.

Caſe III. requires very little comment; it exhibiting a full and even minute account of a complete recovery, from as painful a ſtate as almoſt ever takes place from calculus. It is worthy remark here, that the tendency of the ſyſtem to generate calculus

culus ſeems nearly ſubdued, as appears from the uſe of the mephitic alkaline water being now capable of being omitted for a time, and that a pretty long one, with impunity. Whether it might with ſafety be totally laid aſide, does not appear; nor would it be prudent to hazard the trial.

Caſe IV. is a notable inſtance of both the efficacy and innocence of the remedy; and indicates, as well as the foregoing Caſes, that the tendency to generate calculus may, by the long uſe of the alkaline water, be ſubdued.

Caſe V. is a remarkable example of the powers of the mephitic alkaline water, in a habit of body ſtrongly diſpoſed to generate, and to accumulate, calculous concretion.

Caſe VI. evinces in the moſt ſatisfactory manner, the ſafety of the remedy as well as its efficacy. A perſon of 84 years of age commenced its uſe, and continued it for three years without the ſmalleſt inconvenience to his health, and with the greateſt alleviation of his complaints.

Caſe VII. is an inſtance of the ſpeedy relief afforded by the uſe of this remedy; and of its actually poſſeſſing powers of diſſolving, or diminiſhing the coheſion of the particles that form the calculus.

Caſe VIII. is a remarkable inſtance of relief being gained, when the organs that ſecrete and tranſmit the urine were probably in a highly diſeaſed ſtate. Though no cure was alledged to be performed, nor perhaps poſſible, the ſymptoms that had been the moſt diſtreſſing were ſo much alleviated, as to give little uneaſineſs in compariſon with what had been before endured. There is great reaſon to think that, had the remedy been diſcovered earlier, its uſe might have produced a perfect cure.

Caſe IX. ſtrongly proves the efficacy of the remedy, and ſeems to give additional reaſon to think, that by long uſe the habit of the body may be ſo changed, as to loſe the tendency to produce calculous concretions.

Caſe X. proves, that in ſome caſes a very

weak ſolution of the alkaline ſalt, and taken only in ſmall doſes, may prove an efficacious remedy.

Caſes XI. XII. XIII. XIV. afford the moſt ſatisfactory proofs of benefit received in ſuch diſorders, but are no wiſe particular, ſave that in one of them (Caſe XII.) all the uneaſy ſymptoms were removed, although there was every reaſon to think the calculus remained.

Caſe XV. affords a remarkable proof of the efficacy of the mephitic alkaline water, in a complaint of the urinary paſſages, attended with ſymptoms reſembling calculus, which were originally owing to accidental external violence.

Caſe XVI. affords us ſtrong reaſons to think, that had fortunately the diſcovery of the alkaline water been earlier made, it would have worked a cure in Caſe VIII. The perſon whoſe Caſe is here deſcribed, appears to have laboured under a highly diſeaſed ſtate of the urinary paſſages, and perhaps of the ſecreting organs; yet theſe complaints

complaints have been totally removed, and the general ſtate of health, as we have every reaſon to think, much improved.

Caſe XVII. is in a good meaſure analogous to that immediately preceding.

Caſe XVIII. This Caſe varies from moſt of the others, in the relief gained being ſlower than is generally the caſe. The cure, however, appears to be as complete as could poſſibly be expected; and the medicine ſeems to have been rather favourable than otherwiſe to the general health. An obvious practical caution reſults from the conſideration of this Caſe, that thoſe afflicted with this diſorder ſhould not deſpair of relief, or even of cure, becauſe the painful ſymptoms do not abate ſo ſoon with them as they appear to have done in moſt of the hiſtories here related. Had the gentleman who is the ſubject of the narrative here under conſideration, not poſſeſſed great perſeverance and ſteadineſs, he would have failed of a cure, and his Caſe might have been adduced as an *unſucceſsful* trial of this remedy.

Caſe

Caſe XIX. is a fair inſtance of the efficacy and innocence of the remedy; but affords occaſion for no particular remark, ſave that it appears from this and the foregoing Caſe, that an advanced age is no diſcouragement to the trial of the mephitic alkaline water. In Caſe XVIII. the patient was 69 years old; and in Caſe XIX. 67 years. Yet both received the greateſt benefit.

Caſe XX. beſides exhibiting an inſtance of the greateſt benefit received in a truly calculous caſe, ſhews alſo, that the alkaline water poſſeſſes a power of diſſolving the calculus.

Caſe XXI. affords a ſatisfactory inſtance of the efficacy of this remedy, after moſt of the things uſually adminiſtered (ſoap lees particularly) had been tried without giving even relief. The Caſe is deſcribed ſo particularly as to need no farther comment. I ſhall only add, that Colonel Williamſon's health is ſo well eſtabliſhed, as to enable him to go to Jamaica, where he now has the command of the artillery department.

Caſe

Caſe XXII. contains nothing particular, ſave the ſhortneſs of the time in which relief was procured.

Caſe XXIII. was communicated by Mr. Perry, an ingenious and eminent ſurgeon of this city. It ſhews in the moſt ſatisfactory manner, that the alkaline water poſſeſſes a power of diſſolving the calculus. What degree of a lithontriptic quality it is endued with, does not appear; but we are informed, that the ſolution of the calculus took place in leſs than the ſpace of twelve months.

Caſe XXIV. which is the laſt, ſhews the efficacy of the Aqua Mephitica Alkalina, in a complaint evidently ariſing from the nature, and probably from the ſtimulant qualities, of the urine. The repeated good effects that followed the taking the medicine, and the return of the complaint on its being laid aſide, amount to as full proof that ſuch relief was owing to the remedy, as the ſubject is capable of. It muſt afford comfortable reflections to perſons ſo afflicted, to find from the above Caſes

that,

that, although the Aqua Mephitica Alkalina undoubtedly has a power of diſſolving the calculus, and thereby ſtriking at the root of the complaint; yet, that relief may be expected before any material diſſolution of the calculus can take place, and even whilſt we know it is actually ſubſiſting. Several of the Caſes ſhew this, which can only be aſcribed to the change produced by the remedy in the nature and qualities of the urine itſelf.

It is obſerved of this diſcharge, that in calculous paroxyſms, eſpecially if accompanied with great pain, it is almoſt always cauſtic and irritating, like other fluids ſecreted from inflamed parts. The mucus of the noſe, which is in general mild and bland, becomes frequently, by a catarrhous inflammation of the veſſels that ſecrete it, ſo acrid, as to excoriate thoſe parts of the noſe and lips upon which it falls. A ſimilar change takes place in the urine, which, under ſuch circumſtances, generally feels ſcalding and painful to the ducts through which it paſſes; and this irritation

tion conſtitutes no ſmall part of the miſery of the ſufferers.

I would not, however, by any means deny that the mechanical action of calculous ſubſtances is often ſufficient to cauſe great pain. Experience proves that this is frequently the caſe; but it is equally certain, that large calculi both of the kidneys and bladder have remained there many years with little trouble or uneaſineſs, and that even the pain produced by paſſing them is by no means proportioned to their ſize. A pretty large concretion, compared with the diameter of the urinary ducts, is mentioned, in one of the Caſes above recited, to be diſcharged without pain; whilſt others of a leſs bulk were often accompanied, in their paſſage, with great torture, and large effuſions of blood.

The particles of ſand, that come away, are often too inconſiderable to cauſe the uneaſineſs that is experienced, were not the membranes that line the ducts in a ſtate of inflammation, and conſtant irritability.

This

This acrimonious condition of the urine is almoſt conſtantly accompanied with a diſpoſition to precipitation. Hence the turbid appearance of this diſcharge in ſuch paroxyſms, which the ſufferers often vainly flatter themſelves to be the criſis of their diſorder, when in reality it is no more than an indication of its prevalence. Both theſe circumſtances the ſaturated alkaline ſolution is very efficacious in removing, neutralizing as it were the acrimony of the urine, and reſtoring to it, together with its natural colour, its power of retaining in perfect ſolution thoſe ſubſtances which it was intended by nature to diſcharge.

Another circumſtance, much in favour of a trial of this remedy, is, that it acts without any violence of operation. The firſt effects, obſerved in all the inſtances above related, ſeem to have been the abatement of the pain and uneaſineſs, and the reſtoration of the urine to its natural colour and other properties. It is not found to act even as a ſtimulus on the urinary ſecretion, a thing ſomewhat remarkable; and though in one caſe it may appear to have exerted ſome

aperient effect, this was ſo inconſiderable as to render it a matter of doubt if it was to be imputed to the qualities of the medicine, or to the taking in an additional quantity of watery fluid, which, it is well known, will often produce that effect. It no where appears to have injured the appetite, digeſtion, or general health. It has manifeſted no ſeptic qualities in itſelf, nor produced any upon the ſyſtem; nay, thoſe which took place from the uſe of the cauſtic alkaline lixivium, ceaſed during the trial of this remedy. The perſons I have ſeen, who have tried it, have exemplified its innocence reſpecting the general health, as ſtrongly as its particular efficacy in this complaint.

It appears that the uſe of this medicine is not neceſſary to be ſuperſeded by ſlight indiſpoſitions. It has been taken in place of the common ſaline draught, and no very obſervable difference found in the effect; and one of the Caſes ſhews, that it may be continued, without any apparent injury, during the courſe of a common gouty paroxyſm.

I would

I would not, however, by any means aſſert, that the indiſcriminate uſe of this remedy is admiſſible in all ſtates of health. The quantity may often be an objection to ſome; the taſte may prove diſagreeable, and perhaps in ſome complaints (though I know of none at preſent) it may be ſpecifically injurious. Experience, joined with prudence, is the only guide we have to direct us in ſuch circumſtances.

But although I think it probable, that the principal advantage derived from this remedy is owing to the change it produces in the urine; yet the experiments ſhew, that it poſſeſſes conſiderable powers as a ſolvent of the calculus. That its efficacy in this point of view may be compared with that of water ſimply impregnated with Fixible Air, I have formed the foregoing comparative table of their effects reſpectively. The difference in their ſolvent powers is inconſiderable; whilſt the operation of the alkaline ſaturated ſolution is much milder, and, as I think, of a different kind from that of the ſimple impregnation of water with Fixed Air.

From examination of the effects of the two menſtrua, it ſhould ſeem that the action of the latter was principally upon the animal gluten or mucus that connected the ſandy particles, which it gradually diſunited, until they fell into powder; whereas from the corroded and worm-eaten appearance of the calculi immerſed in the alkaline ſolution, the ſandy particles themſelves ſeem to have been acted upon. How this is brought about, is matter of difficult inveſtigation.

From Bergman's experiments, it appears, that the acid of ſugar and calcareous earth, which probably form the ſtony part of the calculus, bear a ſtronger attraction to one another than any body does ſeparately to either; ſo that the addition of no ſimple ſubſtance, at leaſt any that we can introduce into the body, will ſeparate them. But we ſhould conſider, that many bodies are capable of decompoſition by a double elective attraction, that are not ſo by any other means. Thus vitriolate tartar may be decompoſed by ſolution of ſilver, though neither of the ſeparate ingredients would

have any effect. This may poſſibly take place here, the alkaline ſalt attracting the acid of the ſugar, and the Fixible Air the calcareous earth; and as the former of theſe compounds is ſoluble in a watery fluid, and the latter ſo when the Fixible Air is redundant, this may account for the clearneſs of the urine, and its freedom from precipitation, which the taking this remedy induces. The compound of the acid of ſugar with calcareous earth is ſcarcely ſoluble in water.

I make no doubt that the change in the *qualities* of the urine may be in part owing to the ſame cauſe. It is true, the ſaline ſubſtance formed by the union of the acid of ſugar with calcareous earth, does not appear very acrimonious to the ſenſes; but we ſhould conſider, that our ſenſes are very imperfect judges of ſpecific ſtimuli. Tart. emetic. and mercurius dulcis, whoſe operation on the ſtomach and bowels is ſo violent, betray no ſuch effects in their ſenſible qualities; and we frequently find that clear, pale, and inſipid urine is retained with greater difficulty than what appears

much more ſaline and acrimonious. It is poſſible that this compound may poſſeſs ſome ſpecific ſtimulus on the bladder and urinary organs.

The alkaline ſolution has exerted various degrees of a ſolvent power upon the different calculi, ſome reſiſting its operation more than others; but none have totally withſtood its influence. This difference may be owing to ſeveral cauſes; ſuch as the calculus having remained expoſed a longer time to the air, which increaſes its hardneſs, as it does that of ſeveral kinds of ſtone; its having been ſlower or quicker produced; or its containing a different proportion of animal mucus; and probably other circumſtances, which we do not at preſent, and perhaps never may, underſtand.

It appears pretty plain, I think, that diuretic remedies, merely as ſuch, have no good effects in calculous complaints. Independent of their ſtimulus, which I believe always to be injurious, it is found, that a quick ſecretion of urine has no ef-

fect in preventing the generation of calculi. A gentleman whoſe caſe is related above, had a ſtone generated evidently during a courſe of the Harrowgate waters, which acted powerfully as a diuretic.

The experiments made with the ſaturated alkaline ſolution, as an antiſeptic, confirm the obſervations of Mr. Colborne, on the effects it ſhewed on his urine; and we may infer from both, that no danger is to be apprehended from any putrefactive tendency, which, as an alkali, it might be ſuppoſed to produce.

In the former editions of this work it is mentioned as a probable conjecture, that a ſolution of the *foſſil* alkali ſaturated with fixible air, might prove equally efficacious with the *vegetable* in the relief of calculous complaints. Mr. Colborne's very judicious experiments, which ſhew that it poſſeſſes the ſame ſolvent powers upon the gravelly concretions out of the body, together with the great ſimilarity it bears in its chemical properties to the vegetable alkali, firſt led me to adopt this opinion,

which has been ſince confirmed, by conſidering, what did not before occur to me, that this remedy in form of a mineral water had long been in uſe, and even high reputation, for the cure of ſimilar complaints.

The waters of Carlſbad in Bohemia, ſo called in honour of the emperor Charles IV. who in the year 1370 diſcovered their medicinal virtues, are celebrated by Hoffman for their good effects in calculous complaints. "In caſes," * he ſays, "where the kidneys, ureters, and bladder are clogged with

* Sive enim renes, ureteres et veſica muco tartareo et ſabulo obſideantur, ſive calculus et lapidoſa materia in ureterum cavo ſubſiſtat et diros dolores ſuſcitet, tam præclara Carolinarum eſt facultas, ut copioſius ad renales tubos delatæ, intus contentas ſordes et materias alienas eliquando et fluxiles reddendo ejiciant, ſpaſticis autem ſtricturis ureterum reſiſtendo, eoſdemque ampliando et laxando humoris ope obhæreſcentem in eorum alveo lapidem protrudant et elidant. Quin ipſam autem generationem calculi ejuſque incrementum antevertunt; dum humores diluunt et ſalſedinem et acrimoniam eorum contemperant, quo minus mucoſæ et ſalſæ materiæ coire et concrementum lapidoſum exoriri poſſit. Accedit et illud quod thermales hæ aquæ ſi urina cum ardore et dolore ſtillet, exoptatiſſimam ſpondeant opem. *Hoffman de Thermis Carolinis*, § XIV. Cap. V.

with tartarine mucus, and gravel, or where a calculus is actually formed, and by remaining fixed in the urinary paſſages excites the moſt direful agonies, the virtues of the Carlſbad waters are particularly ſerviceable, by looſening the adherence of ſuch matters to the urinary ducts, and waſhing them away, and alſo in abating the ſpaſmodic ſtrictures of the paſſages, and thus procuring a free diſcharge for the calculous concretions."

"They moreover," as he ſays, "prevent the generation or increaſe of calculi, by their diluting qualities, and by their moderating the ſaline acrimony of the humours, by which the ſaline and mucous matter is prevented from acquiring a hard or ſtony conſiſtence. Theſe waters likewiſe produce the happieſt effects in abating the heat and pain that accompany the paſſage of the urine."

The good effects above-mentioned to be produced by the Carlſbad waters, are almoſt exactly the ſame with thoſe which proceed from the uſe of the mephitic al-

kaline water, which is by no means extraordinary, if we conſider that the two remedies reſemble one another ſo nearly. The water of Carlſbad contains, as its principal impregnation, the * foſſil alkali largely combined with † Fixible Air, which explains its beneficial operation in this diſorder more ſatisfactorily, than by referring it altogether to the aerial impregnation, as is done by Dr. Dobſon. However, according to Hoffman's account, it contains but a dilute ſolution of the alkaline ſalt, not more than one drachm ‡ being contained

* Affuſo ſyrupo violarum thermæ hæ viridem colorem induunt. *De Thermis Carolinis*, § VI. Cap. II.

† Thermæ hæ cum quocunque acido, ſive ſit mite, ut acetum, ſive forte, ut ſpiritus ſalis, vitrioli, aut nitri, efferveſcunt cum magnâ bullularum et exhalationum in aerem copiâ. *De Thermis Carolinis*, § VI. Cap. II.

Licet odor circa ſcaturiginem obvius, volatile quoddam principium ſalinum prodat; non tamen urinoſi quippiam redolet, ſed ſimilis odor ferme eſt illi, quando coquitur ſal tartari cum ejus cremore miſtum in aquâ. *De Thermis Carolinis*, § XIII. Cap. II.

‡ Ex libris duabus medici ponderis obtinuimus drachmam materiæ ſalino-terreæ, quæ aquæ ope iterum liquata, et per chartam emporeticam trajecta, concretione factâ, ſalis puri dedit drachmam circiter dimidiam: hoc ſal, teſte ſapore, proxime accedit ad ingenium

tained in two quarts of the water, whereas eight times that quantity is contained in the mephitic alkaline liquor. But we know that a conſiderable proportion of ſaline matter is always loſt in ſuch experiments, it not being poſſible to recover from a ſolution of this kind, as much of the ſalt as we are aſſured it contains, part of it being diſſipated by being changed into volatile alkali, by being united with phlogiſton, and part loſt by cryſtallizing on the filtre, and by other inaccuracies unavoidable in ſuch trials. It is therefore certain that the Carlſbad water contains a larger proportion of alkali than is ſtated by Hoffman, though at the ſame time the impregnation is not ſtrong. To make amends however for its weakneſs, the Carlſbad water is drank in much larger quantity than what the mephitic alkaline water is taken. Hoffman ſpeaks of from 15 to 18 cups, as the daily quantity for rather * weakly

genium ſalis tartari intenſè alcalizati. Conſligit enim cum quovis acido, et cum ſale ammoniaco mixtum, penetrantiſſimum volatilem ſpiritum elicit. *De Thermis Carolinis*, § VII. Cap. II.

* Proinde tutius eſt primo die XV. tantum vel XVIII.

weakly people to begin with, which, ſays he, is increaſed by moſt of thoſe who uſe it to thirty, and by ſome few to forty cups a day.

How much the cup or *ollula*, as he calls it, might contain, according to our meaſure, I cannot determine, but I think we can ſcarcely ſuppoſe that a mineral water could be given out in cups of leſs than a quarter of a pint contents. The middle doſe then, at this rate, muſt be three quarts and three half pints daily, which would contain, according to Hoffman's calculation, which is unqueſtionably below the mark, 112 grains of the alkaline ſalt, which is not very different from the quantity contained in a pint of the mephitic alkaline water above deſcribed, which holds 120 grains, which is to the quantity daily taken in the Carlſbad waters as 15 to 14.

The ſame celebrated writer aſcribes nearly the

XVIII. ebibere ollulas, niſi majorem doſin firmitas, minuſque mobilis corporis conſtitutio ſuadeat. Inſequenti vero tempore, plurimis ad XXX. uſque quotidie ollulas, paucioribus ad XL. aſcendere conducit. *De Thermis Carolinis*, Cap. VII. § VI.

the ſame virtues to the Selters water, "which," according to his account, "has a wonderful efficacy * in complaints of the kidneys, bladder, or ureters, when theſe organs are either obſtructed by tartarine mucus, or calculous matter, or in a corroded and ulcerated ſtate. Whilſt it abates the acrimony of the humours, it diſſolves and waſhes out the mucus, and clears the kidneys, ureters, and bladder from any matter of this kind that may be lodged in them, and tends, not only to prevent the generation of a calculus, or to ſtop the increaſe of one already formed, but alſo affords the moſt deſirable relief in the ſtrangury, and when the urine is voided with pain and difficulty, and is thick and turbid

* In renum, veſicæ et ureterum morbis, qui vel a tartareo muco et calculoſâ materiâ has vias obſtruente, vel ab eroſâ et exulceratâ ipſarum ſubſtantiâ proveniunt, admirabilem habet virtutem. Dum enim humorum acrimoniam temperat, mucum diſſolvit et eluit, reneſq; veſicam et ureteres a materiâ ipſius inhærente repurgat, non modo ad calculum præcavendum, aut jam præſentis incrementa impedienda, præſentis eſt efficaciæ, verum etiam in ſtranguriâ difficilique ac doloreſicâ urinæ craſſæ ac turbidæ mictione, exoptatiſſimas affert ſuppetias. *Hoffman de Elementis et Viribus Fontis Selterani*, § XIV. Cap. II.

turbid in its appearance. The Selters water, as well as that of Carlſbad, is impregnated with the * foſſil alkali, but in larger proportion, two quarts of the Selters water containing four ſcruples of alkaline ſalt, whereas the ſame quantity of the Carlſbad water contains no more than three. The alkali however here, as well as in the other, appears to be fully ſaturated † with Fixible Air. I do not know in what quantity the Selters water is taken; but if it be drank as largely as the Carlſbad water, about 150 grains,

* Selteranarum libras duas medicas ſuper leniori igne, quem carbones ſubminiſtrarunt ardentes, evaporationi commiſimus, et en! materiæ albæ ſalinæ, tenuiſſimæ, drachmam unam cum duodecim granis obtinuimus.—Idem reſiduum in aquâ liquatum et per chartam colatum bibulam, præbuit lixivium, ex quo, lenioris exhalationis ope, alcalini ſalis ſcrupulos duos obtinuimus. *Hoffman de Element. et Viribus Fontis Selteram*, § V. Cap. II.

† Sicuti ergo ſingula hæc experimenta planum atque teſtatum faciunt fontem Selteranum affluentem ſalis alcalini puri copiam in complexu ſuo alere, ita pariter ex variis a me obſervatis phænomenis evictum eſſe credo, eundem inſtar omnium aquarum ſalubrium maximeque acidularum, puriſſimo illo volatili et minerali ſpiritu eſſe imbutum. Ibid. § VI. Cap. II.

Nec dubitare amplius licet, quin eidem ſpirituoſo minerali ingredienti, ſalubris harum aquarum facultas quod maximam partem tribuenda eſt. Ibid. § IX, Cap. II.

grains, or two drachms and a half of the alkaline ſalt will be the daily doſe, if we compute each *ollula* or glaſs at a quarter of a pint contents. Milk appears to be commonly joined with Selters * water in diſorders of the kidneys, the milk of aſſes eſpecially; and ſpices † and other aromatics are alſo occaſionally combined with it, much in the ſame manner as is adviſed in the preſent work.

Dr. Nooth, a gentleman whoſe knowledge and ſagacity in philoſophy, as well as in medicine, are well known, ſuggeſted to me the probability that the alkaline ſalt, ſaturated with Fixible Air, and cryſtallized, might perhaps be equally effectual as a lithontriptic, and in abating the acrimony of the urine, as the mephitic alkaline ſolution, whilſt it would be more convenient, as being eaſily portable, and alſo as it would be free of any ſtimulus, which the ſuperabundant quantity of Fixible Air might produce on the urinary paſſages.

Not

* Ibidem, § XI. XII. XIII. XIV.
† Ibidem, § XIX.

Not having made a trial of this preparation, I cannot anſwer for its effects in this way, but ſhould think it not unlikely to ſucceed, eſpecially when we reflect that a ſalt of a ſimilar nature, cryſtallized from the Carliſbad waters, is recommended by Hoffman* in ſuch complaints. If ſuch a preparation be attempted, it will be neceſſary to uſe the greateſt caution in previouſly ſaturating the alkaline ſolution with Fixible Air to its fulleſt extent, and of carrying on the evaporation as gradually, and, of courſe, with the leaſt heat poſſible, and frequently removing it from the fire,

* Et cum ob abſorbentem ſuam facultatem, acidum, cujus cum terrâ connubium gignit calculum, cicurare et in medium ſal convertere valeat; hinc tam ad avertendam tartarei coaguli geneſin, quam exturbandum minorem calculum inſignis eſt efficaciæ. Quo nomine etiam iis commendari vix poteſt, qui, vel ob nativam, vel ab alio qualicunque errore diætetico, contractam renum et urinariæ veſicæ imbecillitatem, ejuſmodi calculoſis concretionibus et generandis et fovendis ſunt idonei. Quemadmodum pariter ſingularem ejus experiuntur efficaciam, qui vehementes a calculo in arctum et nervoſum ureterum cavum intruſo, dolores ſentiunt, quibus, præ omnibus aliis medicinis lithontripticis, tam reſolvendo, præſertim ſi recens fuerit tartarei muci concrementum, quam exturbando illius copiam egregiè et citò, opitulatur ſal Carolinarum. *De Sale Medicinali Carolinarum*, § XXII.

fire, and ſuffering the ſalt to cryſtallize, which laſt proceſs alſo ſhould be gradual; and therefore when the liquor is removed from the fire, it ſhould cool very ſlowly, and when cold be carefully poured off from the cryſtals that are formed, and again evaporated in like manner. I apprehend that it would be proper, when the liquor is evaporated pretty nearly to the point at which cryſtallization would begin to take place, when the liquor ſhould be cold, to put it again into the glaſs machine, and impregnate it a ſecond time with Fixible Air; which will probably, by ſupplying the Fixible Air that may have been diſſipated by the heat, accelerate the cryſtallization, and enſure the neutralization of the alkali. The mephitic alkaline ſolution, when meant to be evaporated, ſhould be made much ſtronger than when it is meant to be drank, yet ſhould not be ſo much loaded as to impede or clog the tubes through which the Fixible Air riſes. About four ounces of ſalt of tartar to a pint of water, ſeems likely to prove a proper quantity. It ſhould be noticed that the ſtronger the

ſolu-

ſolution, the longer time it would require to be neutralized by the Fixible Air *.

Perhaps the foſſil alkali might be more convenient for this purpoſe, as it cryſtallizes more eaſily than the vegetable; but it muſt be obſerved alſo, that the foſſil alkali will cryſtallize before it be perfectly neutralized by the Fixible Air, and on that account more caution will be neceſſary in ſaturating it perfectly before any evaporation be commenced, and of conducting the evaporation itſelf as ſlowly as poſſible.

Experience will beſt aſcertain the doſe in which ſuch a remedy may be taken. Perhaps one drachm daily might be ſufficient to begin with, which might be gradually increaſed to two, three, or more. Hoffman ſays, that the Carlſbad ſalt is taken to ſix drachms, or an ounce, without pro-

* Should any perſon be inclined to make a trial of the Aerated Alkali, either the Vegetable or the Foſſile, it may be had, ready prepared, in great perfection, of Mr. Thomas Willis, at the Hermitage, Wapping, a moſt ingenious practical chemiſt.

producing any other effect than that of proving gently laxative.

To what the wonderful propenſity, in certain habits and conſtitutions of body, to generate urinary calculi, is owing, is yet undiſcovered. Various modes of life, and regimens of diet, have been aſſigned as cauſes, and many facts have been adduced as proofs; but theſe accounts are all ſo ambiguous, inconſiſtent, and contradictory, that little can be concluded from them. Hard waters are at one time believed to produce them; at another, they rather tend to prevent their generation: wine is at one time preventive, and at another productive, of calculi; and malt liquor, which ſome condemn, is by others as extravagantly recommended *.

It appears highly probable, that the cauſe originally conſiſts in the ſtructure or nature of the ſecreting gland itſelf. By what means this can change the quality of the fluid, ſo as to render it at one time apt

* See Medical Commentary, p. 128.

to precipitate its contents, and at another to hold them in perfect ſolution, is to us inconceivable; but not more ſo than the generation of blood from the chyle, or of bile from the blood, the mechaniſm or proceſs of which is probably among the ſecrets of nature too deep for our comprehenſion. It is at leaſt certain, that confinement to a certain poſture will in ſome inſtances produce this complaint. I have ſeen it originate from ſitting long at a ſedentary employment, as writing; and from long confinement to bed, by an illneſs no ways connected with calculus. Ramazzini makes the ſame obſervation of perſons whoſe way of life requires a ſtanding poſture; which he inſtances by that of the attendants at the courts of princes, thoſe of Spain eſpecially, among whom diſorders of this kind were particularly frequent.

Whether theſe theories be true or falſe; whether the remedy acts by means of chemical combination with the fluid ſecreted, or by any ſtill more obſcure means upon the ſecreting organ itſelf; the facts ſtill remain unimpeached. The caſes above related

lated evince, beyond a doubt, that the painful ſymptoms in calculous diſorders have been removed, and eaſe procured, by the uſe of this remedy, and this without any ill effect on the general health; but, on the contrary, with great amendment of it in moſt caſes. To account for theſe, is the province of philoſophical inveſtigation; and with that view I have, however imperfect they may be, offered my ſentiments; but whether the opinion I have here adopted be well or ill founded, the facts are equally valuable, and will, I truſt, encourage the farther trial of a remedy, which, in a manner the moſt eaſy, and favourable to the health in general, bids fair to relieve, in a degree hitherto unexperienced, one of the moſt excruciating diſorders that is incident to human nature.

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